

REPORT

ON THE

Public Health Administration of the Punjab

AND

Proceedings of the Sanitary Board

FOR THE YEAR 1923

BY

LIEUTENANT-COLONEL W. H. C. FORSTER, D.P.H., I.M.S.,

Director of Public Health, Punjab

AND

The Report on Sanitary Works for 1923

BY

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No remarks.

Section VII.—Vaccination.

(Separate report.)

Section VIII.—Sanitary Works, Military.

No remarks.

(The text of the Public Health Report is limited to 20 pages and that of the Sanitary Engineer to 4 pages.)

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Proceedings of the Punjab Government (Ministry of Education) in the Home (Medical and Sanitary) Department, No. 19868, dated 20th August 1924.

READ—

Report on the Public Health Administration of the Punjab, for the year 1923.

REMARKS.—The year 1923 was a year of good harvests and low prices, but was considerably less healthy than the year 1922. Heavy winter and spring rains favoured the spread of plague; and a slight excess in the monsoon rainfall was responsible for an increase in the mortality from "fevers." The year was, however, relatively healthy, and the death rate was lower by 6·1 *per mille* than the "quinquennial average."

2. During 1923 the birth rate rose to 43·2 *per mille*, as against 37·3 *per mille* for the year 1922. This figure is the highest recorded for any Province in India, with the exception of the Central Provinces, for which the birth rate stood at 45·63. The death rate, from all causes was 30·94 *per mille*, a figure higher than that recorded for any other Province, and very considerably higher than the rate (22·1) for 1922. There is room for improvement in the system of registering and checking vital statistics. During the year under review it was decided to introduce as an experimental measure, in the districts of the Lahore Division, a system under which revenue patwaris are responsible for the maintenance of the village registers of births and deaths. This system has not been in operation sufficiently long for its results to be estimated.

3. The year under review was almost entirely free from Cholera, only 25 cases and 11 deaths being recorded. The death rate from small-pox was slightly higher than in 1922, but lower than the quinquennial average. Plague, on the other hand, appeared in an epidemic form, causing 52,327 deaths, (including deaths which occurred in Indian States) as against 7,837 deaths in 1922, and an average for the past five years of 29,173 deaths. In the course of an interesting discussion on the activity of plague, the Director of Public Health points out that during the past twenty-five years there has been a gradual decrease in the frequency and severity of epidemics, and suggests that, although the decline of plague may be associated with the occasional emergence of epidemics of considerable severity, "the present plague cycle is on the wane." It is to be hoped that this view will prove correct; but the persistency of the epidemic of 1923, and the heavy plague mortality of 1924 have caused grave anxiety both to the public and to Government. The importance of preventive measures cannot be over-estimated, and it is to be feared that the intensity of the recent outbreaks of plague are in part due to neglect on the part of Local Bodies to organize campaigns for the destruction of rats in areas that have recently enjoyed comparative immunity from the disease. The increasing popularity of inoculation, for which, during epidemics, there is now an enormous demand, is encouraging; and it is to be hoped that in the future the necessity for preventive measures will be more fully realized.

4. As usual, the largest number of deaths recorded under any one head was due to "Fevers". As remarked in the report, the term "Fevers" is comprehensive, and includes a large number of diseases, both epidemic and non-epidemic. Relapsing Fever appeared in several districts in an epidemic form, more especially in the Western Punjab. The total recorded cases of, and deaths from, this disease were 28,830 and 7,568, respectively. In the Muzaffargarh District, where the epidemic was particularly severe, special curative and preventive measures were taken. The disease was at first regarded as Influenza, but as soon as its true nature was detected an emergency staff under the control of Captain R. C. Malhotra, Assistant Director of Public Health, was despatched to the infected area. The staff was composed of 11 Assistant and 10 Sub-Assistant Surgeons, lent by the Medical Department, with a considerable subordinate personnel. Efforts were concentrated on the administration of arsenical compounds by intravenous injection; and on disinfection, as a preventive measure by means of Serbian Barrels, and by the boiling of clothes in kerosine

oil tins. Great assistance in the supply of medical comforts was given by the St. John Ambulance Association, and the District Board spent a sum of Rs. 6,600 in connection with the Epidemic, of which some Rs. 5,000 were contributed by private subscription. The treatment by injection met with marked success and nearly 6,000 injections were given during a period of three months.

5. The comparative unhealthiness of the year under review was due largely to the occurrence of a widespread epidemic of malaria. Successful use was made of Lieutenant-Colonel Gill's method of forecasting malarial epidemics ; but, as the Director of Public Health observes, the diminution of malaria must ultimately depend upon the execution of schemes of land-drainage and not upon the mere distribution of quinine.

6. During 1923 a scheme for the reorganisation of the Public Health Department was brought into force. The scheme entailed changes in personnel; in nomenclature; and in the distribution of work. There are now four permanent appointments of Assistant Director of Public Health. Of the officers holding these appointments, two hold charge of two of the three circles into which the Punjab is divided for the purpose of Public Health Administration. The other two hold charge respectively of Vaccination and Epidemiology, and of the districts which constitute the third circle. In place of the old plague staff there is now a District Staff consisting of twelve Assistant Epidemiologists, holding Public Health qualifications, with suitable subordinate personnel. It is hoped that, as the number of Health officers appointed by District Boards increases, each district will ultimately be provided with a Medical Officer of Health. The Malaria Bureau is now termed the Epidemiological Bureau, and is staffed by three specially qualified Assistant Epidemiologists. The effects of the working of the scheme are difficult to estimate. Owing to the absence of officers on leave, and to the fact that the full number of Assistant Epidemiologists was not entertained at one time the posts existing under the reorganisation scheme have not in all cases been held as individual charges, and the scheme has therefore not been put into operation as a whole.

7. During 1923-24 (up to 31st December 1923) the Sanitary Board, Punjab, made grants (exclusive of grants from the reallocation for lapses) amounting to Rs. 1,54,663 for sanitary works, and administrative approval was accorded either by the Board or by Government to a large number of important schemes. Among the works for which grants were allotted may be mentioned the Amritsar Storm Water Channel (Rs. 64,205) and the Dera Ghazi Khan Water-Supply Extension Scheme (Rs. 30,441). Important works to which administrative approval has been accorded are drainage schemes at Ludhiana, Maghiana and Sialkot; and Water Supply Extension Schemes at Rawalpindi, Campbellpur and Sargodha. The Board is handicapped in its activities by lack of sufficient funds and by apathy on the part of Local Bodies, especially in rural areas.

8. The thanks of Government are due to Lieutenant-Colonel Forster, who held charge of the office of Director of Public Health throughout the year under review, and to the staff of the department for their work during the year. In particular, the Punjab Government (Ministry of Education) wish to place upon record their deep regret at the death of Major Cragg, I.M.S., of the Central Research Institute, who died during the year under review of typhus fever contracted during an investigation into the epidemiology of the disease in the Punjab.

ORDER.—Ordered that a copy of the foregoing remarks be circulated with the report and be furnished with the usual number of copies of the Report to the Government of India, also that the review be published in the *Punjab Government Gazette*.

Ordered, also, that a copy be furnished to the Director of Public Health, Punjab, for information.

By order of the Punjab Government (Ministry of Education).

FAZL-I-HUSAIN,

A. LATIFI,

Minister for Education.

Secretary to Government, Punjab,

Transferred Departments.

Errata.

Annual Public Health Report of the Punjab for 1923.

1. In the table in paragraph 5, page 2, against Average Death-rate 1903-22 in column "all other causes" for "6.28" read "6.22".
2. In line 11 of paragraph 24, page 8, for "107" read "170" and in line 33 of the same paragraph for "89" read "90".
3. In line 6 of paragraph 25, page 8, for "51,177" read "50,177".
4. In line 21 of paragraph 26, page 11, for "1918" read "1919".
5. Appendix B, page III, against Sangla Water Supply, for Rs. "79,069" read "79,609".
6. Appendix B, page v, against Hoshiarpur Drainage after 2nd line *insert* "Papers regarding acquisition of land for a portion of the extramural drainage of the main town of Hoshiarpur are still pending disposal with the Deputy Commissioner, Hoshiarpur".
7. In the statement of "waterworks", page vi, appendix B, in column 3 against Ambala (Handesra) for "28,551" read "28,581".
8. Annual Form No. IV, column 12, against Simla, for "13,788" read "13,338".
9. Annual Form No. IV, column 126, against Karnal, for "44.00" read "40.00".
10. Annual Form No. VI, column 12, against Ferozepore, for "384" read "348".
11. Annual Form No. VI, Hoshiarpur district, against Anandpur town, column 29, for "8.41" read "3.41".
12. Annual Form No. VI, Hoshiarpur district, against Garhdiwala town, column 30, for "16.18" read "16.36".
13. Annual Form No. VI, Hoshiarpur district, against Dasuya town, column 30, for "53.41" read "53.48".
14. Annual Form No. VI, Gurdaspur district, against Dera Nanak town, column 13, for "2" read "3".
15. Annual Form No. VI, Lahore District, against Khudian town, column 30, for "56.32" read "55.32".
16. Annual Form No. VI, Attock District, against Hazro town, column 10, for "..." read "2".
17. Annual Form No. VI, Multan District, against Shujabad town, column 26, for "..." read "1.49".
18. Annual Form No. VI, Shahpur District, against Shahpur town, column 31, for "33.65" read "38.65".
19. Annual Form No. X, column 3, against Kangra, for "16" read "17".
20. Annual Form No. XI, column 4, against Gujranwala, for "26" read "20".
21. Statement No. I, column 23, against Jhelum, for "262" read "242".

A faint, sepia-toned watermark-like image of a classical building with four prominent columns is visible in the background.

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Section I.

The Director-General of Observatories has kindly furnished the following brief summary of the meteorological features of

Chief meteorological features.

the Punjab for the year 1923 :—In January rain-

fall was normal in the east and north Punjab, and in moderate defect in the south-west Punjab. The western disturbances that appeared during February caused unusually heavy rain throughout the province, the heaviest precipitation occurring in the hills and the submontane districts ; averaged over the whole province rainfall was two-and-a-half times the normal amount. The western disturbances of March were less active than usual and rainfall was generally in considerable defect. Widespread rainfall occurred twice in April in connection with western disturbances ; but the total rainfall though normal in the south-west Punjab was in considerable defect in the east and north Punjab. Western disturbances gave widespread and unusually heavy rain also in May, especially in the north and the central Punjab ; the month's fall was in excess by 233 per cent. in the south-west Punjab and 123 per cent. in the east and north Punjab. In June the weather was dry in the plains except for some local falls in the third week due to a temporary extension of the monsoon ; consequently rainfall was in large defect throughout the province. The monsoon extended into the Punjab on the 7th July and gave widespread and locally heavy rain till the 10th ; it was rather weak in the next ten days ; but was again active between the 22nd and 26th the total fall of the month was roughly normal. In the month of August the monsoon was vigorous on most days, especially in the south-eastern and central districts, and the month's fall was above normal by 120 per cent. in the south-west Punjab and 61 per cent. in the east and north Punjab. During September the monsoon extended but seldom into the province and the weather was much drier than usual over the greater part of the plains. Taking the monsoon period as a whole rainfall was normal in the east and north Punjab and in slight excess in the south-west Punjab. In October four western disturbances gave much more rain than usual in the hills and submontane districts ; but in November there was little or no rain. In December heavy rainfall again occurred in the east and north Punjab in connection with western disturbances, and the total fall of the month was 131 per cent. above normal ; in the south-west Punjab on the other hand it was in considerable defect.

Skies were more clouded than usual in February, May to August and in October. In March, April, September and November, on the other hand, cloud proportion was in defect. Humidity was above normal in February and August and below normal in June. The maximum temperature was distinctly below normal in February, May and August, and slightly below normal in January and October ; it was above normal in April and June. The minimum temperature was above the average in February.

2. The Director of Land Records, Punjab, has furnished me with the usual return which shows that the average

Prices of food-grains.

retail prices of wheat during the year 1923 was

$10\frac{5}{16}$ seers at Multan, $9\frac{1}{16}$ at Rawalpindi, $9\frac{9}{16}$ at Ambala and $9\frac{5}{16}$ at Lahore.

The average rates of barley were $17\frac{1}{16}$ seers at Ambala, $17\frac{7}{8}$ at Rawalpindi, $15\frac{1}{16}$ at Multan, and $15\frac{9}{16}$ at Lahore, and that of Jawar $12\frac{5}{8}$, $15\frac{3}{8}$, $14\frac{1}{2}$ and $9\frac{5}{16}$ respectively. As regards bajra the average rates varied from $10\frac{1}{16}$ to $12\frac{7}{8}$ seers at Lahore, Ambala, Multan and Rawalpindi ; that of maize from $11\frac{7}{16}$ to 16 and of gram from $12\frac{7}{8}$ to $14\frac{5}{16}$ seers per rupee. The prices were lower than in the preceding year owing to good crops and low demand.

3. The third regular wages survey of the Punjab was taken in December 1922 and the only general results

Wages of labour.

that can be deduced are that wages have risen,

and that they have become more competitive and tend to differentiate more between qualities of labour and local demand.

Section V.—Vital Statistics.

4. The census population of March 1921 (20,517,606) has been taken as the basis for calculating the birth and death-rates for this report. The estimated Population. population prepared according to the usual method comes to 21,295,808 (11,620,356 males and 9,675,452 females) and shows that the census population had increased by 778,202 on 31st December 1923. This increase is shared by all the districts in the Province except Kangra. Calculated on the estimated population the birth-rate is 41·6, i.e., 1·6 *per mille* less than the rate calculated on the census figures, and similarly the death-rate is 29·8 or 1·1 less than the figure calculated on the census population. In individual districts the rates calculated on the census figures exceed those calculated on the estimated population in all the districts in the Province except Kangra.

5. The year 1923 with a total death-rate of 30·9, although relatively a healthy year, compares unfavourably with General summary. 1922 which had a total death-rate of 22·1 and is illustrative of the ease with which the pendulum can swing from healthy conditions to epidemic conditions in the Punjab. The Province in fact is always on the verge of an epidemic and it requires very little in the way of climatic conditions to establish an epidemic. The table beneath gives the data on which this statement is based :—

	Total death-rate.	Cholera.	Small-pox.	Plague	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Injuries.	All other causes.
Average death-rate 1903-1922.	38·87	0·25	0·52	6·23	22·03	0·64	2·60	0·38	6·23
Percentage of total deaths.	100	1	1	16	57	2	6	1	16

It will be seen that the chief heads of mortality are—

(1) Fevers. (2) Plague. (3) All other causes.

Of these "fevers" and "plague" are extremely susceptible to climatic influences. Any excess of the monsoon rainfall is at once reflected, on account of malaria, in the death-rate from "fevers" and similarly the plague death-rate is apt to be affected by an excess of rainfall in the December-May period. For the period December 1922 to May 1923 the rainfall was considerably in excess, whilst the monsoon rainfall was normal in the east and north Punjab and in slight excess in the south-west Punjab. What was the effect of this rainfall distribution on the vital statistics of the Province? The total death-rate for 1923 was 8·8 *per mille* in excess of that for 1922 and of this excess 5·5 and 2·0 were provided by "fevers" and "plague" respectively. Of the balance 1·1 was provided by "all other causes" a heading which is always influenced by increases under "fevers" and "plague." In effect, therefore, the excess mortality of 1923 was contributed mainly by fevers and plague, or in other words an excess in the winter rainfall was sufficient to double plague mortality and a monsoon rainfall slightly in excess was sufficient to increase the fever death-rate by 37 per cent. Plague in comparison with malaria reacts slowly to rainfall since it requires two successive favourable seasons, but assuming that rainfall conditions in 1924 are as favourable to plague as they were in 1923, what will happen to the Province if the 1924 monsoon is considerably in excess? The answer is that we will return to the conditions which obtained during the census period 1901--1911 when the population was actually reduced.

As we cannot control the weather it is obvious, if the liability of the Province to violent epidemics is to be lessened, that strenuous endeavours must be made to secure control of the conditions through which rainfall operates. An energetic forward policy with regard to preventive medicine in all its ramifications is required, a policy for which the Province is ripe. The Drainage Board in time will secure mastery over malaria but the Drainage Board at present is without funds ; the district public health agencies in time will rob plague of its terrors and have already given proof of their utility in this respect, but these agencies are few in number. Financial stringency inevitably re-acts on all departments, but when the allocation of funds between beneficent departments is under examination the probable consequences of delayed activities in the sphere of preventive medicine will require very careful consideration.

6. Births.—There were 885,587 births in the Punjab during 1923, of which 468,186 were males and 417,401 females, Annual Form No. I. the corresponding figures for last year being 806,461, 425,984 and 380,477. The birth-rate during the year under report, which amounted to 43·2, is the highest to be recorded since 1918, when it was 39·6. This year's rate is 3·9 *per mille* in excess of that for the previous year and is due to the healthiness of the Province during the last and the early part of the year under review. The male birth-rate (22·8) exceeded the female rate by 2·5 *per mille*.

Compared with the quinquennial average only 3 districts show a birth-rate below the mean, viz., Ferozepur, Lahore and Sialkot, the decrease in no case amounting to more than 2·2 *per mille*. On the other hand, some districts show a very substantial increase, for example Montgomery 9·5, Dera Ghazi Khan 8·2, Gujranwala and Attock 7·4 each, and Jhang 7·3. The birth-rates in districts, when compared with those for the preceding year, show an increase in all the districts except Ferozepur, Lahore, Sialkot and Lyallpur. The comparative decrease is most marked in the case of Lahore, 3·3, Sialkot, 2·0, and Ferozepur 0·9. In these districts the birth-rates also show a decrease when compared with their quinquennial average. The fall in Lahore is attributed to the prevalence of malaria, in Sialkot to plague and in Ferozepur to relapsing fever.

7. During the year under report the highest birth-rate was registered in the Central Provinces, (45·63), the Punjab coming next with a birth-rate of 43·16.

The rate in the other Provinces was as follows :—

Bihar and Orissa	...	...	...	...	37·02
United Provinces	...	...	...	...	36·04
Bombay	...	...	...	...	35·57
Madras	...	...	...	...	33·1
Bengal	...	...	...	...	29·9
Burma	...	...	...	...	29·51
Assam	...	...	...	...	28·82
N.-W. F. Province	...	...	...	...	27·6

8. In the 45 principal towns of the province (those with a population of 10,000 or upwards) the birth-rate amounted to 42·7 as against 40·0 in the preceding year

Birth-rate in large towns. and 43·6 during the previous five years. The rates in the three largest towns were Amritsar 51, Multan 46, Lahore 37, the corresponding rates for last year being 47, 43, 34, respectively.

9. The highest birth-rate in any district was recorded in Gurgaon, 50·1

Highest and lowest birth-rates.
Annual Form No. I.

Amritsar coming next with 49·7, followed by Lyallpur with 48·9, Jhang 47·7, Gujranwala 47·5 and Rohtak 47·0. The lowest rate was registered

in Sialkot 24·5; Muzaffargarh, Dera Ghazi Khan and Ferozepur came next with a birth-rate of 37, 35·9 and 36·4, respectively. In the others it varied from 38·1 in Kangra to 46·5 in Mianwali. The provincial rate of 43·16 was exceeded in 13 out of the 29 districts in the province.

10. The excess of births over deaths this year was equivalent to 12·3 per 1,000 of the census population as against 17·2 last year. In some districts the excess was considerable, e.g., Lyallpur 23·5, Mianwali 23·0, Jhang 22·6 and Gurgaon 21·4; in the remaining districts it varied from 2·0 in Karnal to 19·9 in Montgomery. Only two districts viz., Sialkot and Muzaffargarh, had a death-rate in excess of the birth-rate, the actual excess being 11·7 in Sialkot and 4·6 in Muzaffargarh. In Sialkot this excess was due to malaria and plague and in Muzaffargarh to relapsing fever.

11. Deaths.—The total number of deaths registered during the year was 634,862, of which 328,845 were males and 306,017 females, the resulting rates being 30·9 29·4 and 32·9, respectively, as compared with 22·1, 21·5 and 22·7 during the previous year. The rates this year though higher than those for 1922 are considerably less than the quinquennial averages, viz., 36·4, 35·0 and 38·1. Of the provincial death-rate (30·9), 20·5 was due to fevers, 5·2 to all other causes, 2·4 to plague, 1·9 to respiratory diseases, 0·6 to dysentery and diarrhoea, 0·3 to injuries, 0·1 to small-pox and 0·001 to cholera. The increase of 8·8, *per mille* over last year's rate is due to increased mortality under the head of "fevers," "plague," and "all other causes."

12. During the year under report the death-rate of the Punjab was higher than that of any other Province, being 30·94 *per mille*, the Central Provinces coming next with 30·53. The rates were as follows :—

Punjab	...	...	...	...	...	30·94
Central Provinces	...	...	...	...	...	30·53
Bombay	...	...	...	...	...	25·89
Bengal	...	...	...	...	...	25·5
Bihar and Orissa	...	...	...	...	...	25·04
North-West Frontier Province	...	...	...	...	...	23·7
Assam	...	...	...	...	...	23·54
United Provinces	...	...	...	...	...	23·37
Madras	...	...	...	...	...	22·2
Burma	...	...	...	...	...	20·87

13. The provincial death-rate (30·9) was exceeded in 13 districts namely, Sialkot, in which the death-rate was 55·4, Karnal 40·1, Muzaffargarh 38·3, Gujranwala 36·4, Ludhiana 35·8, Hissar 33·6, Ambala 33·2, Ferozepur 33·1, Amritsar 32·6, Jhelum 32·5, Rawalpindi 32·3, Rohtak 31·5 and Jullundur 31·4. In all of these districts, except Muzaffargarh, Rawalpindi and Amritsar in which relapsing fever, plague and respiratory diseases, respectively, was responsible for the increase, malaria was the principal cause of the higher mortality. In Sialkot and Gujranwala plague also helped to swell the number of deaths. Among the districts which recorded a rate lower than the provincial rate were Simla (17·7), Shahpur (21·9), Mianwali (23·5), the rate in the remaining districts ranging from 24·1 to 30·2.

14. This year the highest monthly rate (4·01) was recorded in October as compared with 2·47 recorded in November last year. The increase this year is due to the increased mortality from malaria. The lowest monthly rate (1·59) was recorded in February as against 1·42 recorded in the same month last year. The quarterly death-rate was January—March 5·42, April—June 7·93, July—September 6·30, October—December 11·29.

15. As the population for the age groups under one year is not available, only absolute numbers for the first 3 periods can be given.

Not exceeding one month.—The total mortality for this group was 81,377 (43,606 males and 37,771 females), being most marked in the districts of Jullundur 4,843, Amritsar 4,803, Ferozepur 4,205, Lyallpur 3,980 and Lahore 3,931. Among Muhammadans the total number of deaths reported was 45,229 (24,340 males and 20,889 females), Hindus 34,969 (18,608 males and 16,361 females), Indian Christians 964 (534 males and 430 females), and other classes 215 (124 males and 91 females).

Over one month and not exceeding six months.—The total mortality amounted to 48,414 (25,836 males and 22,578 females), the figures for districts recording the highest number of deaths being Karnal 4,214, Sialkot 2,723, Ferozepur 2,442, Hoshiarpur 2,411, Lahore 2,334 and Amritsar 2,050. Among Muhammadans the number of deaths reported was 26,451 (14,174 males and 12,277 females), Hindus 21,137 (11,238 males and 9,899 females); Indian Christians 696 (356 males and 340 females); and other classes 130 (68 males and 62 females).

Over six months and under twelve months.—The total mortality amounted to 44,335 (23,461 males and 20,874 females), the districts of Sialkot, Ferozepur, Lahore, Amritsar and Gurdaspur being responsible for the largest, number of deaths, viz., 3,044, 2,864, 2,786, 2,531 and 2,398, respectively.

Infants under one year.—The total mortality in this group was 174,126 showing an increase of 39,647 when compared with the figures for the last year. The total death-rate for this group is 208.92 *per mille* of census population as compared with 161.35 for 1922 and 191.33 in the previous five years. Calculated on the total number of births during the year the total death-rate was 196.62 (198.43 for males and 194.59 for females) per 1,000 births as compared with 166.75 (169.58 for males and 163.55 for females) in 1922. Classified according to communities the highest death-rate in this group was recorded as usual under "Other classes", the rates being 5,115.38 for males and 11,800.00 for females; Hindus come next with 22.83 and 208.02; Muhammadans, 214.31 and 192.82; and Indian Christians 158.77 and 146.39.

Among the different age periods the rates of mortality for the years 1922 and 1923 are as under :—

Age.	1922.		1923.	
	Males.	Females	Males.	Females
Under one year	169.99	152.37	218.61	198.84
1 and under 5 years	39.57	38.02	58.87	59.39
5 „ 10 „	7.43	7.76	11.23	13.11
10 „ 15 „	6.51	8.18	10.24	14.25
15 „ 20 „	7.60	10.03	11.98	16.61
20 „ 30 „	7.88	10.02	11.58	14.94
30 „ 40 „	9.83	11.76	13.57	17.20
40 „ 50 „	14.75	14.72	20.06	21.98
50 „ 60 „	21.09	20.30	28.03	29.45
60 and upwards	50.41	52.06	61.08	68.65

A comparison of the figures cited in the above table shows that the death-rate in every age group was higher than the corresponding figures for the preceding year. The female death-rate exceeded the male death-rate in all age groups except "under one year".

16. According to classes the death-rate in order of low mortality

Deaths by classes. Annual Form No. IV. was Hindus, 27.79 males and 32.20 females; Indian Christians, 29.74 males and 30.68 females; Muhammadans 30.45 males and 33.28 females; and other classes 62.04 males and 134.63 females.

17. The urban death-rate was 32·50 and the rural death-rate was 30·77 as

Deaths in towns and rural circles.
Annual Form No. VI A and B.

against 24·97 and 21·74 for last year, the average for the preceding five years being 35·29 (urban) and 36·55 (rural). The urban rate exceeded the

rural rate under all the heads of mortality except plague and fevers, under which heads the excess of the rural death-rate over urban death-rate was 0·13 and 4·77, respectively. The rates recorded in the three largest towns were Amritsar 36·64, Lahore 34·11 and Multan 28·18 as against 29·78, 26·35 and 23·77 in the previous year and 40·95, 33·11 and 42·52, the average for the preceding five years. The excess over the rates for the previous year was chiefly due to excess mortality from fevers.

In the minor towns the highest death-rate was recorded in Mitrnwali, 82·47, Kalaswala coming next with 76·25, Fatehabad 75·23, Bhopalwala 65·49, Daska 63·82, Sahowala 57·48, Kaithal 56·73, Sirsa 55·97, Khudian 55·32, Dasuya 53·48, Chunian 53·00, Chawinda 51·12 and Gohana 50·71. With the exception of Mitrnwali, Kalaswala, Bhopalwala, Daska, Sahowala and Chawinda where the high death-rate was due to plague, the high death-rate in these towns was due to fevers.

The lowest death-rates were recorded in Khanewal (1·59), Mian Channu (1·74), Bangla (5·70), Chuharkana Mandi (5·72), Nankana Sahib (6·14), Khangah Dogran (6·34), Gidarbaha (8·50), Moga (8·55), Palampur (9·42), and Okara (9·85.) These low rates are mainly due to the absence of epidemics of plague and malaria.

18. Compared with the last year, there has been a decrease of 143,601

Inspection of Birth and Death registers.

in the total number of entries checked, the actual number checked being 607,859 in the birth and 385,730 in the death registers. A portion

of the decrease is due to the fact that Divisional Inspectors of Vaccination were completely abolished during 1922. The major part of the decrease, however, is undoubtedly due to slackness on the part of the existing checking agencies.

The percentage of omissions detected to total number of entries checked by Superintendents of Vaccination and Vaccinators works out to 2·03 for male and 2·16 for female births and 1·20 for male and 1·30 for female deaths.

The revenue staff detected omissions at the rate of 2·84 and 1·62 in the case of births and 1·37 and 1·35 in the case of deaths. There was an increase of 12,217 in the number of entries checked by Tahsildars and Naib-Tahsildars when compared with the figures for the previous year which satisfactory circumstance is due to the interest taken in this matter by the Revenue officers. Sixty-nine Chaukidars were fined for neglecting to report births and deaths during the year, the fines amounting to Rs. 72. In Municipal towns 69 persons were fined for failing to register births and 72 for failing to register deaths, the total fines amounting to Rs. 112. The highest number of omissions were discovered in the districts of Mianwali, Karnal, Gujrat and Gujranwala. Of these Mianwali, Karnal and Gujrat also showed an increase in the number of omissions detected last year which is not surprising seeing that in these districts the persons who fail to report births and deaths are not punished.

19. At railway stations outside municipal limits 33 births and 21 deaths

Births and deaths among railway em-
ployees.

were recorded during 1923 as against 25 and 12, respectively, in the previous year. Of these deaths 18 were due to fevers and one each was

recorded under the heads "dysentery and diarrhoea", "respiratory diseases" and "Injury".

20. There were 336 births and 115 deaths among Europeans and

Births and deaths among Europeans and
Anglo-Indians.

Anglo-Indians during the year under report as against 423 and 172 respectively, last year. The deaths were distributed as follows :—

All other causes 68, respiratory diseases 16, fevers 22, dysentery and diarrhoea 5, and injuries 4.

21. Among the non-military population of Cantonments there were 4,295 births (*31 per mille*) and 3,029 deaths (*22 per mille*), the corresponding ratios for the previous year being 26 and 18. The deaths were classified as follows :—

1,533 fevers, 814 all other causes, 417 respiratory diseases, 124 dysentery and diarrhoea, 91 plague, 43 injuries, 6 small-pox and 1 cholera.

22. During the year under report Government decided to introduce as an experimental measure a new system of registration of births and deaths in the districts of the Lahore Division under which this duty was transferred from the police to patwaris who were made responsible for the submission of the vital statistical returns to Civil Surgeons. A preliminary report received from the Civil Surgeons of the districts concerned shows that in the districts of Gujranwala and Sheikhupura the new system is working satisfactorily, but in the remaining districts it has not proved a success.

Section I—Chief Diseases.

23. **Cholera.**—No epidemic of cholera occurred in the Punjab during the year 1923. The total number of cases and deaths from this disease during the year under report was 25 and 11, respectively, as compared with 287 cases and 128 deaths in 1922 and 30,093 cases and 19,215 deaths in 1921. The mortality rate was .001, as compared with .01 and .94 *per mille* in the two preceding years and an average mortality rate of 0.28 *per mille* for the previous five years.

These 25 cases occurred in the following districts :—Karnal (1 case), Hoshiarpur (1 case), Jullundur (6 cases), Ferozepur (2 cases), Lahore (4 cases), Gujranwala (1 case), Gujrat (2 cases), Shahpur (3 cases), Rawalpindi (3 cases) and Multan (2 cases).

The seasonal distribution of the disease was normal, 20 cases out of 25 occurring during the months of July, August and September, the actual details being : April (1 case), May (1 case), June 3 (cases), July (6 cases) August (7 cases) and September (7 cases).

The source of infection was somewhat obscure. Thus the first recorded case in the Punjab during the year, which took place in Hoshiarpur District, is reported to have been due to importation from Amritsar city, although no case of cholera occurred in this city throughout the year. Again a case of cholera in Lahore city on 14th June, is believed to have been due to infection contracted in Ferozepur city where the disease was absent at the time. Another case occurred in Karnal District in June in which infection is believed to have been acquired at a fair held on the banks of Jumna River. On the other hand a case of cholera reported from Multan District on the 26th May is believed to have been of indigenous origin, more especially as it was followed by a second case in the same locality on the 9th June. On July 3rd five cases with one death occurred in Jullundur city in circumstances which strongly suggested an indigenous origin, the suspected source of infection being milk. In August isolated indigenous cases occurred in Gujrat, Shahpur, Gujranwala and Rawalpindi Districts. In September two indigenous cases occurred in Ferozepur city and two in Shahpur and one in Gujrat. In four instances, all of which occurred in September, infection was said to have been acquired at Hardwar. The association of these cases with towns is noteworthy ; 18 of the 25 cases occurred in cities or large towns and only seven in rural areas.

There is little to report in regard to preventive measures. The prompt steps taken by the officers of the Public Health Department to prevent the spread of the disease were attended with success, but it is only necessary to recall the severe epidemic of the year 1921 in which over 19,000 people lost their lives to realise that our present methods of combating epidemics of cholera are not equally successful in "bad" cholera years. It must be emphasised that scientific knowledge regarding the epidemiology of this

disease in the Punjab is by no means complete. There is reason to believe that cholera is an endemic disease in this Province, and it is also probable that drinking water is not the sole and perhaps not even the main source of infection, but until more precise knowledge in regard to this and certain other points is forthcoming, the task of the practical sanitarian in attempting to control cholera is beset with difficulties.

24. Small-pox.—The deaths registered from small-pox in the province during the year amounted to 2,140, giving Annual Form No. VIII.

a rate of $0\cdot10$ *per mille*, which was $0\cdot02$ higher

than that for the last year and $0\cdot23$ lower than the mean ratio for the preceding quinquennium. Continued from December of the previous year, in which month the disease was at its maximum, the number of deaths recorded from small-pox was 203 in January and 121 in February. In March the number fell to 91 and from this month the disease began to increase, the number of deaths rising to 131 in April, 227 in May and 267 in June. The mortality then fell to 220 in July, 153 in August and 82 in September. The disease again began to spread in October and November when 103 and 107 deaths respectively were recorded and continued to increase until December, in which month the highest number of deaths, *viz.*, 372 was registered. The district recording the highest death-rate from small-pox was Hoshiarpur $0\cdot34$, followed by Ludhiana $0\cdot26$, Lahore $0\cdot22$, Hissar $0\cdot20$, Sialkot and Gujranwala $0\cdot17$, Montgomery $0\cdot16$, Sheikhupura $0\cdot14$, Lyallpur $0\cdot13$, Gurgaon $0\cdot12$ and Ferozepur, Amritsar and Multan $0\cdot11$. In the remaining districts the death-rate was below the provincial rate. The lowest rate recorded was $0\cdot091$ in Karnal, as in last year, while Simla remained free from the disease during the year.

Of the deaths registered from the disease 617 were infants under one year and 1,083 children between one and ten years as against 505 and 747 respectively in the previous year. The proportion of male to female deaths was as usual nearly equal, the rate during the year under report being $0\cdot11$ in the case of males and $0\cdot10$ in that of females as against $0\cdot07$ and $0\cdot08$ in the preceding year.

The death-rate in urban areas was $0\cdot34$ as compared with $0\cdot08$ in rural circles. The average rate for towns in which the Vaccination Act is in force was $0\cdot31$ as compared with $0\cdot35$ for the previous year. Among the large towns of the province Lahore headed the list with a death-rate of $0\cdot54$, Multan and Amritsar coming next with $0\cdot35$ and $0\cdot28$, the corresponding figures for the previous year being $1\cdot11$, $0\cdot41$ and $0\cdot10$, respectively. Of the 158 towns 89 remained free from the disease during the year and the remainder registered 702 deaths between them as against 659 in the previous year. The death-rate from small-pox was highest in Pindi Bhattian $4\cdot16$, Bhiwani $3\cdot31$, Una $3\cdot26$, Faridabad $3\cdot23$, Haryana $2\cdot88$, Miani (Shahpur District) $2\cdot68$ and Jagraon $2\cdot54$.

25. Plague.—A quarter of a century has elapsed since the present visitation of plague commenced in the Punjab and the renewed activity of the disease during the past year renders it appropriate to examine briefly the present situation.

The total number of reported deaths from plague in the Punjab during the year 1923 was 52,327 (51,177 in British Districts and 2,150 in Indian States) as compared with 7,837 deaths in the preceding year and an average of 29,173 during the previous five years. The plague death-rate was $2\cdot11$ *per mille* in British Districts as against a mean death-rate of $1\cdot27$ in the preceding quinquennium.

The urban and rural plague death-rates were $2\cdot05$ and $2\cdot48$ *per mille* respectively as compared with a mean urban and rural death-rate during the preceding five years of $1\cdot69$ and $1\cdot22$ respectively. In addition therefore to the plague death-rate in 1923 being relatively high both in towns and in rural areas as compared with the quinquennial figures the rural death-rate in the year under review departed from quinquennial mean figures by exceeding the urban plague death-rate.

The calendar year and the plague year do not coincide, and in comparing the mortality figures for the year 1923 with the figures for previous years it is convenient to regard the plague year as commencing on July 1st, 1922, and ending on June 30th, 1923. On this basis the plague mortality during the year 1922-23 was 43,791 as compared with an average annual mortality of 122,712 during the past 25 years. During the first lustrum the plague mortality was above the mean on two occasions; during the second quinquennium, on three occasions; during the third, twice; during the fourth, on one occasion, whilst during the fifth and last quinquennium it was below the mean in every year. The frequency of plague epidemics is therefore declining. There has likewise been a considerable decrease in their severity, since the plague mortality during the last four quinquennia has consistently declined from over a million *above* the mean in the period 1903-08 to over half million *below* the mean during the period 1918-23. These facts therefore suggest that the present plague cycle is on the wane. Nevertheless it is clear, in view of the recent history of plague in this province, that the decline of plague may be associated with the occasional emergence of plague epidemics of considerable magnitude and severity.

The course of the epidemic during the calendar year 1923 was as follows. As the result of the recrudescence of the disease in the autumn of 1922 three distinct plague infected areas were recognisable in January 1923:—(1) a northern area comprising localities in the districts of Sialkot and Rawalpindi, (2) a central area involving the districts of Lyallpur, Gujranwala and Sheikhupura, and (3) a southern area embracing localities in the district of Rohtak, and in Jind State. The remaining districts of the province were plague free. In February these endemic areas although wider in extent were still clearly defined. The southern area now included the districts of Rohtak, Hissar, Gurgaon and Karnal; the central area, the districts of Lahore and Montgomery, whilst the districts of Jhelum, Attock, Shahpur and Gujrat now formed part of the northern endemic area. In March the disease, whilst maintaining for the most part its former distribution, rapidly assumed epidemic proportions, the districts chiefly affected being Sialkot (3,702 deaths), Lyallpur (459 deaths), Gurgaon (342 deaths), Rohtak (220 deaths) and Gujranwala (217 deaths). Still maintaining approximately the same distribution and the same relative intensity, the epidemic reached its fastigium in the seventeenth week of the year—the usual time—and then commenced to decline.

It is a curious feature of plague in 1923 that the decline of the epidemic was much slower than normal, the mortality figures (British districts) for April, May and June being 15,354, 13,792 and 4,948, respectively.

The disease was almost entirely *bubonic* in type, but during February and March localised outbreaks of pneumonic plague occurred in the north of the province and in certain sub-montane districts; septicæmic plague also occurred sparingly in many infected districts.

Following the late and incomplete decline of the epidemic plague lingered during the hot weather months in an unusually large number of localities with the result that the monthly plague mortality for the period from June to October 1923 was considerably in excess of the mean figures for the past 25 years. In the autumn plague recrudesced to an unusual degree, the districts affected being mainly those in which incomplete or "late" epidemics occurred during the preceding spring. The infected districts in December 1923 were thus with few exceptions (due for the most part to isolated imported cases) those in which the disease was widespread during the first half of the year.

The most striking features of the plague history of the year 1923 may be summarised as follows:—

- (1) The occurrence of an epidemic of moderate intensity and restricted distribution in the spring.
- (2) The slow and incomplete decline of plague during the hot weather.
- (3) The early and marked recrudescence of the disease towards the end of the year.

Preventive Measures.—During the "off season" the extirpation of rats by trapping and by poisoning (barium carbonate) together with the "smoking" of rat holes with Lane's Neem butties was carried out with a variable degree of thoroughness. In Gurgaon, Rohtak, Rawalpindi, and certain other districts

intensive rat destruction campaigns were carried out in recently infected areas during the "off season," but in many districts, partly on account of financial stringency and partly because plague fatalities during recent years have been few, no sustained effort was made to reduce rat infestation. In Lahore City, for example, the Municipal Committee abandoned rat destruction some 4 years ago, and although plague was prevalent in the city in the spring of 1923 and rat mortality continued to occur throughout the hot weather, no attempt was made to organise an anti-rat campaign until after plague again became epidemic in the autumn.

When the epidemic became wide spread rat destruction operations were confined to uninfected areas and attention was concentrated upon measures to protect the individual and to prevent the spread of the disease, *viz.*, inoculation, evacuation and disinfection. It is satisfactory to be able to record that the value of anti-plague inoculation, as the result of many striking instances of its protective power, is becoming more widely appreciated. Indeed towards the end of the year the popularity of this measure became so pronounced that it was necessary to augment the plague staff in order to cope with the sudden demand for inoculation. The number of inoculations performed during the year was 100,554, or 192 for every 100 plague deaths; in November and December 1923 this figure was greatly exceeded in association with an increased demand for inoculation. Evacuation was also largely carried out in villages, and whilst the public health staff often found it necessary to allay an undue desire to seek safety in flight they were even more often confronted with the difficult task of overcoming a deep-rooted objection to evacuation entertained by fatalistic villagers. Nevertheless the spread of more enlightened views regarding the value of anti-plague measures during the past few years is as marked as it is encouraging. With this change in heart there is every reason to hope that, given ceaseless activity upon the part of all ranks of the Public Health Department outbreaks of bubonic plague will ere long become more amenable to control. Much attention was also devoted to propaganda and, thanks to the generosity of the Red Cross Society, Punjab Branch, all Urban and District Health Officers were supplied with a magic lantern. A standard lecture dealing with the prevention of plague and slides illustrating these lectures have been prepared by the Education Bureau of this Department and it is hoped that they will be the means of enlisting the active support of the public in anti-plague measures.

26. Fevers.—There were 420,398 deaths registered under the head of "fever" during the year under report, as compared with 306,654 in 1922 or an increase of 113,744. The "fever" death-rate was 20·49 as compared with 14·95 in 1922 and a mean death-rate of 26·84 for the past five years.

The districts exhibiting a "fever" death-rate above the provincial mean "fever" death-rate (20·49) are as follows:—Muzaffargarh (35·94), Karnal (32·53), Hissar (26·52), Dera Ghazi Khan (26·50), Ferozepur (24·46), Gujranwala (23·07), Jullundur (22·79), Ludhiana (22·37), Amritsar (22·09), Hoshiarpur (20·67).

The total deaths and death-rate from "fevers" in the 158 towns of the Province was 33,591 or 16·20 *per mille*, respectively, as compared with 24,976 or 12·10 *per mille* in the previous year. The towns with a population of over 10,000 exhibiting a "fever" death-rate in excess of the provincial mean (16·20) are as follows:—Kaithal (43·10), Sirsa (42·18), Fazilka (29·50), Karnal (29·24), Ludhiana (26·72), Jagadhri (24·52), Baghbanpura Bhogial (23·61), Jalalpur (22·98), Hissar (22·41), Patti (20·21), Amritsar (19·03), Sialkot (17·82), Gujrat (17·48), Lahore (17·29), Gujranwala (17·16), and Batala (17·11).

The three cities of the Punjab—Lahore, Amritsar and Multan—recorded "fever" death-rates of 17·29, 19·03 and 12·50, respectively, as against 12·99, 14·55 and 8·86, respectively in the preceding year and an average rate of 18·27, 21·19 and 16·55 in the preceding five years. In the case of the

smaller towns the "fever" death-rate was extremely high in Fatehabad (55.34), Chunian (49.30), Dasuya (37.54), Gohana (37.01) and Khudian (35.29).

The provincial "fever" death-rate in rural areas (excluding towns) was 20.97 as against 15.26 in the previous year and a quinquennial average of 28.78. The districts (rural areas) in which the "fever" death-rate was above the provincial average (20.97) are as follows :—Muzaffargarh (36.81), Karnal (33.37), Dera Ghazi Khan (27.55), Hissar (27.00), Ferozepur (25.39), Gujranwala (24.45), Jullundur (24.04), Amritsar (22.92), Ludhiana (22.44) and Hoshiarpur (21.03).

"Fever" is a comprehensive term which includes a large number of diseases, both epidemic and non-epidemic ; amongst the former are included malaria, relapsing fever, typhus fever and certain forms of plague, whilst the latter embrace many diseases whose nature cannot be stated.

The above facts, however, enable the following conclusions to be drawn regarding the incidence of mortality ascribed to "fevers" during the year under report :—

- (1) The year was a relatively unhealthy year in the Province as a whole, the "fever" death-rate being higher than in any previous year (with the exception of the year 1921) since the year 1918.
- (2) This increase in death-rate was exhibited both by urban and rural areas, the increase, as compared with the previous year, in the urban "fever" death-rate being 4.10 *per mille* as compared with an increase of 5.71 *per mille* in the rural "fever" death-rate.
- (3) The increase in the "fever" death-rate was not universally distributed throughout the Province, but was mainly confined to certain districts and to certain towns in these districts.
- (4) The three largest cities of the Province all exhibited an increase in the "fever" death-rate as compared with the previous year, the excess being 4.30 per mille in Lahore, 4.48 in Amritsar and 3.64 in Multan.

27.—Relapsing Fever. Relapsing fever has long been endemic in the Punjab, but during the last few years the disease has exhibited a marked tendency to assume epidemic characters. During the year under report the disease was detected in nine districts in four of which it prevailed in epidemic form. The reported incidence of the disease affords no index of its true prevalence, but the presence of the disease was verified in the following districts :—Attock (4 cases and 2 deaths) ; Rawalpindi (14 cases and 1 death) ; Lyallpur (98 cases and 19 deaths) ; Hissar (200 cases and 57 deaths) and Multan (158 cases and 103 deaths).

An extensive epidemic occurred in the districts of Mianwali (427 cases and 99 deaths) ; Ferozepur (946 cases and 182 deaths) ; Dera Ghazi Khan (3,523 cases and 898 deaths) and Muzaffargarh (23,460 cases and 6,207 deaths). In addition isolated cases were reported from Lahore, Dharmshala and other localities, whilst small outbreaks, which were promptly suppressed, occurred in the Jails at Attock, Rawalpindi, Campbellpur and Multan.

The total recorded cases and deaths were 28,830 and 7,568, respectively which gives a case mortality of 26 per cent. The distribution of the disease in epidemic form was mainly confined to the western districts of the Province and the high "fever" death-rate in Muzaffargarh and Dera Ghazi Khan Districts in 1923 was mainly due to relapsing fever. Towns escaped in a remarkable manner whilst the people mainly affected in rural areas were those in indigent circumstances.

The seasonal incidence of the disease was characteristic, most of the small outbreaks commenced in February and reached their maximum intensity in May. From July to September the disease was apparently absent, but in

October it again appeared in epidemic form in the districts (though usually not in the same villages) where it had prevailed during the first half of the year.

An account of the great epidemic in Muzaffargarh and Dera Ghazi Khan districts is being prepared by the Epidemiological Bureau, but it is necessary to mention here the practical measures taken to deal with these outbreaks.

Unnecessary delay still occurs in reporting the presence and detecting the nature of this disease, but, it is hoped, as the result of the appointment of a medical officer of health to each district and of increased facilities for investigation and diagnosis afforded by the newly constituted Epidemiological Bureau, that this source of difficulty will be eliminated in future. The great epidemic in Muzaffargarh district was thus at first regarded as Influenza until the Public Health Department detected its true nature as noted in the last report. Steps were at once taken to organise a preventive service, which was placed under the immediate charge of Captain R. C. Malhotra, O.B.E., I.M.S., Assistant Director of Public Health, Southern Range. In conjunction with the Inspector General of Civil Hospitals steps were taken to obtain an emergency medical staff who, after training in the technique of administering arsenical compounds by intravenous injection, were posted to convenient centres in the affected tract. This treatment, whose success was immediate owing to its dramatic effect, was at first entrusted solely to Assistant Surgeon Pundit Vishwa Nath, whose indefatigable work in this and in other respects is deserving of special mention. Novo-arseno-billon was the drug employed, 5,908 injections being given in the course of three months.

Preventive measures were more difficult to arrange, more especially as the rural population, who are almost universally infested with vermin, are scattered in innumerable small hamlets. Five Serbian barrels were despatched to the district, but as their transport was a slow and difficult process "disinfestation" was mainly carried out by boiling clothes in kerosine oil tins to which soap and sajji (crude caustic soda) were added, whilst bulky articles were dealt with by "ironing." Much propaganda was also carried out by means of leaflets, lectures and demonstrations.

The emergency staff employed on these operations comprised (in addition to the local medical staff) 11 Assistant Surgeons, 10 Sub-Assistant Surgeons, 3 plague supervisors, 11 vaccinators, together with 8 compounders and a staff of coolies. The St. John Ambulance came to our assistance by supplying blankets, milk and four compounders. Apart from the pay of the emergency medical staff, which is a provincial charge, the District Board spent Rs. 6,609 on preventive and curative measures, of which Rs. 5,197 was raised by private subscription in the district.

The above constitutes in brief outline the preventive scheme carried out in the spring campaign in Muzaffargarh district and elsewhere. It was adopted again in the autumn with the modifications and amplifications suggested by experience, and it may be regarded as constituting the standard method of combating epidemics of relapsing fever in the Punjab.

Much greater interest in the subject of relapsing fever is now being displayed by the medical profession, but as the disease is seldom much in evidence at the two teaching centres—Lahore and Amritsar—it would be in the interests of the province if medical students, as part of their instruction in systematic medicine, were sent down in batches to selected centres to make first hand acquaintance with its clinical and epidemiological aspects. This department could select the centres and arrange for the necessary demonstrations in direct collaboration with the Principals of the Medical College and Medical School.

28. Malaria.—The main cause of the unhealthiness of the year 1923 was the occurrence of a relatively severe and widespread epidemic of malaria in the districts of Karnal, Ambala, Ludhiana, Ferozepur, Jullundur, Hissar, Gurdaspur, Montgomery, Gujranwala, and part of the districts of Lahore, Amritsar, Sheikhpura and Hoshiarpur. This epidemic was responsible for

approximately 50,000 deaths (the vast majority being in children under five years of age) during the months of October and November 1923, and it was mainly to this circumstance that the high "fever" death-rate in the above-mentioned districts is ascribable.

Epidemic malaria usually affects rural areas more severely than towns and it is due to this circumstance that the increase in the rural "fever" death-rate was relatively greater than the increase in the urban "fever" death-rate during the year under review.

In the last report reference was made to Colonel Gill's method of forecasting epidemics of malaria. Colonel Gill, being absent on leave, I decided to give the method a direct personal trial and more particularly to see if it was possible to get out a forecast in time to enable preventive measures to be usefully instituted. Following Colonel Gill's principles, I issued two forecasts—a preliminary one on the 1st of August for the special use of the Medical Department indicating the districts where epidemic conditions appeared likely to be established, and a final forecast prepared on the 1st of September for general information. So far as the results of these two forecasts are concerned I may say that Colonel Gill on his return from leave, having carefully analysed the necessary statistics, reported that the forecast in its positive aspect proved absolutely correct with the exception of one district, namely, Lyallpur. The reasons for failure in this respect have been discovered and this particular error can be avoided in future forecasts. In its negative aspects, the forecast was incorrect as regards two districts inasmuch as they displayed a malaria mortality rate which entitled them to have been included in the list of districts in which a malarial outbreak was to be expected. The error in the case of these two districts has also been discovered. The whole subject of these two forecasts has been dealt with at length in the scientific press by Colonel Gill, but here it is only necessary to emphasise certain points :—

Firstly, it has been demonstrated that forecasts of remarkable accuracy can be issued on the 1st of August and 1st of September, respectively, thereby enabling the Medical Department to take timely measures in threatened areas. Secondly, great difficulty was experienced in obtaining early information as to the rainfall figures from individual districts. Steps have been taken to eliminate this difficulty, and in future years the information should be available at the required time. Thirdly, it has been demonstrated that District Medical Officers of Health by means of this method, coupled with their own personal investigations on the spot, should be in a position to know by the 1st of August the probabilities of an outbreak of malaria in their respective districts.

In the year under report preventive measures were put into force in all threatened districts on the issue of the preliminary forecast on the 1st of August. Extra stocks of quinine were obtained and 385 lbs. of the drug in powder form and 298,650 tablets were distributed in affected tracts by officers of the Medical and Public Health Departments and by the vaccination staff. The suddenness and magnitude of these outbreaks renders all measures of this nature merely palliative, and it is the execution of schemes for land drainage that must be regarded as the most effective method of mitigating or preventing the occurrence of these disastrous epidemics.

29. Diphtheria.—The reports from Simla, where the bacteriological section of the Municipal Public Health Department has been raised to a high degree of efficiency by Major E. S. Phipson, D.S.O., I.M.S., were alone of interest. In nearly every case the infection was traced to a carrier of a virulent strain ; an interesting example being the infection of a highly placed official from an Indian servant, who was a carrier. Bishop Cotton's School escaped this year possibly on account of the steps taken by the Governors to comply with the recommendations of my special report referred to last year.

30. Typhus Fever.—In last year's report reference was made to an outbreak of typhus fever in Bhajji State in the neighbourhood of Simla,

As noted, the Health Officer of Simla was warned to be on the watch for possible importations into Simla and the warning proved to be timely. In the first week of January Major Phipson, by means of the system of verifying all causes of death introduced in Simla by him, discovered that the disease had been imported into the station as the result of which quite a sharp outbreak—28 cases with 8 deaths, all among Indians—occurred before the Public Health Department could get the situation in hand. This outbreak has been fully considered by Major Phipson in the Indian Journal of Medical Research, and here it will suffice to say that the importation of the disease was directly traced to the Doomna lime-sellers of Bhajji State.

During the epidemic of relapsing fever in the Muzaffargarh and Dera Ghazi Khan districts officers of the Epidemiological Bureau were deputed to investigate the possibility of a concurrent epidemic of typhus fever. Their reports showed conclusively that such a concurrent epidemic did exist, but as these officers could not be spared for purely investigation work Colonel Hutchinson, Public Health Commissioner with the Government of India, at my request arranged for Major Cragg, I.M.S., of the Central Research Institute, to undertake a general investigation of the epidemiology of typhus fever in the Province. After preliminary consultation with me Major Cragg opened a laboratory in the Punjab Vaccine Institute, Lahore, and commenced an investigation in the course of which, to the great regret of all who knew him, he fell a victim to a virulent attack of this disease.

31. Enteric Fever.—In Simla 10 cases of enteric fever were notified during the year. The majority of these occurred during the months of April to August. Of these, six were proved on investigation to have been imported and the remaining four occurred locally at the time of the year when the fly pestilence is at its highest. Seven cases were confirmed by laboratory diagnosis, in the case of the remainder specimens for laboratory diagnosis were not submitted. Five patients, none of whom had been previously inoculated against enteric fever, died. This figure bears no relation whatever to the incidence of the disease in the Province, it being my experience that in Indian children typhoid fever takes the place of measles in European children and I am inclined to believe that few Indian children reach the age of 12 without experiencing an attack of typhoid fever. These cases, however, are never reported.

32. Dysentery and Diarrhoea.—The total number of recorded deaths from dysentery and diarrhoea was 11,612 or *0·57 per mille*, which is 0·23 in excess of the rate in the previous year and 0·11 higher than the average for the quinquennial period. Rawalpindi, as usual, accounts for the highest death-rate (3·11) though it was 0·23 less than its quinquennial average. Gurdaspur came next with 2·58, Kangra 1·90 and Simla 1·22, Ludhiana 0·87, Sialkot 0·80, Lahore 0·64, Amritsar 0·62 and Ambala 0·58 and in the remaining districts the death-rate was much below the provincial rate and it varied between 0·44 in Ferozepur and 0·01 in Hoshiarpur. The urban and rural rates were 1·44 and 0·47 respectively as against 1·6 and 0·26 in the preceding year.

33. Respiratory Diseases.—The total number of deaths from the diseases of respiratory organs amounted to 38,434 which equals a rate of *1·87 per mille* or a decrease of 0·08 when compared with the figures for the last year and an increase of 0·46 when compared with the average for the last five years. The provincial rate (1·87) was exceeded in 11 districts, but the excess was most marked in Ambala as usual, where the rate was 10·69. Next come Amritsar with 3·89, Rawalpindi 3·23, Ludhiana 2·96 and Kangra 2·75. It was as low as 0·17 in Shahpur, 0·23 in Muzaffargarh, and 0·25 in Montgomery.

The urban rate was 4·49 and the rural 1·58, the corresponding rates for the previous year being 4·39 and 1·68.

34. Injuries.—This is the only cause of death which permits of no misclassification and the figures recorded annually show very little variation as would appear from the following table:—

Year.	Number of deaths.	Year.	Number of deaths.
1918	... 6,191	1921	... 6,561
1919	... 6,896	1922	... 6,153
1920	... 6,490	1923	... 6,405

During the year under report there was a rise of 252 deaths from injuries when compared with the previous year. The recorded rate was 0·31, which is 0·01 in excess of that for the last year and 0·02 less than the quinquennial average. The deaths were classified as below:—

Accident	...	... 4,625 (2,716 males and 1,909 females).
Wounding	...	... 665 (518 males and 147 females).
Suicide	...	... 250 (134 males and 116 females).
Snake bite	...	... 637.
Injuries inflicted by wild beasts	...	... 136.
Rabies	...	... 92.

35. All other causes.—105,776 deaths (56,230 males and 49,546 females) were registered under all other causes during the year as compared with 83,467 in 1922. The incidence of death per mille of population is 5·16 for the year under review against 4·07 in the preceding year and an average of 4·86 during the last five years. The highest rates were recorded in Gurgaon 9·4, Ludhiana 9·1, Gurdaspur 8·4, Ferozepur 6·5, Sialkot 6·3, while the lowest rates were registered in Dera Ghazi Khan 1·5 and Muzaffargarh 1·7.

36. Rabies.—The total number of patients from the Punjab given anti-rabic treatment at the Pasteur Institute at Kasauli during the year 1923 was 2,250 as against 1,939 last year. Of this number, 240 were Europeans and 2,010 Indians. There were 13 deaths and five failures among Indians and one death and one failure among Europeans. In addition two deaths amongst Indians are for various reasons still under enquiry. In the case of 86 persons treatment was either not considered necessary or subsequent events proved that they ran no risk.

SECTION IX.— Public Health Works.

37. The report of the Sanitary Engineer to Government, Punjab, on public health works during 1923 is contained in appendix B to this report.

38. No new village was supplied with village sanitary note books during the year under report.

39. During the year no reward was assigned to the village communities by any District Board for sanitation.

40. During the year 7,398 wells were cleaned and 304 parapets were constructed at a total cost of Rs. 42,701. This shows a great decrease in the amount spent on parapets as compared with the previous year, but the number of wells cleaned during the year under report was in excess of that in the preceding year. A new well was sunk in the dâk bungalow at Fazilka on which the District Board spent Rs. 345 and a water tank at village Cawnpur in Pathankot Taluk (Gurdaspur district) was repaired at a cost of Rs. 500 during the year.

41. The income derived from the sale of street sweepings in municipal towns during the year 1923 amounted to Rs. 5,91,141, which shows an increase of Rs. 3,10,870 over the figures for the last year. The largest sums were realized in Lahore Rs. 2,90,774, Sialkot Rs. 25,892, and Amritsar Rs. 18,977.

42. There were 1,295.92 acres of land under sewage irrigation in the principal towns in the Province and Rs. 90,409 were realized from this source during the year. These figures represent an increase of 6 acres and Rs. 8,301 over the figures for last year.

43. The village sanitation scheme started in seven villages of the district of Karnal worked satisfactorily during Village sanitation. the year, but its introduction in the eighth village was delayed owing to lack of interest on the part of the villagers. In the Gurdaspur district 15 villages maintained a regular conservancy establishment paid by the villages concerned from the village *malta* fund, while three sweepers engaged at Indaura in the Kangra District in the previous year continued to work during the year under report. In the Multan district sweepers have been appointed for the conservancy of villages, their pay being met from the sanitation tax which is equal to the *chaukidara* of the village.

The sanitary rules framed by the District Board of Rohtak were enforced in four villages of the district. It is, however, to be regretted that the village panchayats did not take much interest in carrying out the rules in spite of the efforts made by the District Medical Officer of Health. In the case of one village the rules could not be adopted on account of want of land in the vicinity of the village and in the other villages only feeble attempts have been made to improve their sanitary condition. So far no legal steps have been taken as required by the rules against defaulters by any village panchayat. It is gratifying to note that the sanitary arrangements in Jhawarian and Faruka villages in the Shahpur district continued to work well under Panchayats.

44. During the year 1922-23 the number of municipalities in the Province was 103. The total income during the year, excluding the opening balance of Rs. 44,09,282 and of Rs. 26,54,661 under the heads "extraordinary" and debts, was Rs. 92,89,780. The total municipal expenditure on public health and vaccination was Rs. 50,92,384 as detailed below :—

	Rs.
1. Water supply	17,59,579
2. Drainage	4,47,841
3. Conservancy, including road cleaning and watering latrines	16,32,418
4. Health Officers and Sanitary Inspectors	1,66,118
5. Vaccination	31,731
6. Markets and slaughter-houses	76,856
7. Roads	8,24,587
8. Burning and burial of paupers	8,971
9. Other sanitary requirements	1,44,283

The total income of district boards, excluding the opening balance, amounted to Rs. 1,35,10,129, whilst expenditure on public health and vaccination was Rs. 2,59,710. Although the gross income exceeded that of last year by Rs. 9,62,100, the expenditure on public health purposes was less by Rs. 4,868 than in the preceding year. I commend these figures to the notice of legislators who complain that too little attention is given to the subject of rural sanitation.

The information regarding grants made for sanitary works by the Sanitary Board is given in Appendix A to this report.

45. A list of works of public utility constructed during the year 1922-

Works of public utility by private individuals at their own expense
is given below :—

Ambala Division—Hissar District.—A well and a dharmasala at Kairu, at a cost of Rs. 12,000, by Ishar, son of Sham Lal, and Balmokand, son of Duni Chand, Mahajans of Kairu, in equal share. A well at Pokharwas, at a cost of Rs. 2,200, by Sohan and Har Chand, sons of Mukh Ram, Brahman, of Pokharwas.

Rohtak District.—A well at Kultana, at a cost of Rs. 2,000, by Siri Chand, son of Nathu, Mahajan. A well at Loharheri, at a cost of Rs. 1,600, by Siri Ram, son of Kunja, Mahajan. A Dharmasala at Anwali, at a cost of Rs. 1,100 by Rati Ram, son of Dewan Singh, Mahajan.

Gurgaon District.—A pacca dharmasala at Gurgaon, at a cost of Rs. 1,000, by Pandit Kanihya Lal, pensioner, son of Chain Sukh, Brahman, of Gurgaon. A pacca well at Harphala, at a cost of Rs. 500, by Chhajju, son of Durga, Brahman, of Harphala.

Ambala District.—A pacca well at Babial, at a cost of Rs. 734-0-9, by Mussamma t Nur-ul-Nishan, daughter of Dasaundhan, of Babial. A well at Tandwal, on the Shabzad-pore-Sadhaura Road, at a cost of Rs. 900, by Atma Nath, chela of Jet Nath, faqir, of Tandwal. A serai at Tira, at a cost of Rs. 4,500, by Mussammat Dropdi, widow of Harnam Khatri, of Tira.

Jullundur Division—Kangra District.—A baoli at Dramman, at a cost of Rs. 500, by Mussammat Daraumati, wife of Sakara, Rajput, of Dramman, Tahsil Palampur. A baoli at Chachian, at a cost of Rs. 305, by Ganga Ram, son of Basi, caste Brahman, of Chachian, Tahsil Palampur. A well on a path to Sidhpur Garh village, at a cost of Rs. 180, by Mussammat Mungru, wife of Jangi, Rajput, of Palohra, Tahsil Nurpur. A dharmasala on the road from Kaloha to Chamba Ferry, at a cost of Rs. 32,000, by Lala Mohan Lal, son of Lala Naurangu Mal, caste Sud, of Garli, Tahsil Dhera. A dharmasala and a well at Bhawan, at a cost of Rs. 6,000, by Bhai Gurmukh Singh, of Amritsar.

Hoshiarpur District.—A pacca well with shed at Basi Jana on Hoshiarpur-Khanpur Road, at a cost of Rs. 1,500, by Mussammat Karam Devi, wife of Maghi Ram, Bania, of Khanpur, Tahsil Hoshiarpur. A pacca well with a kacha shed at Khanpur on Khanpur-Dhoga Road at a cost of Rs. 410, by Sher Singh, son of Hira Singh, Saini, of Khanpur. A tank at Munak, at a cost of Rs. 200, by Prem Singh, son of Gajjan Singh, mason of Sinh Chathial.

Jullundur District.—A well at M. Kotah, Tahsil Nakodar, at a cost of Rs. 250, by Sardar Mohindar Singh, son of Nihal Singh, Jagirdar of Kang Khurd, Tahsil Nakodar.

Perozepur District.—A Persian Wheel on the well of District Board High School, Moga, at a cost of Rs. 224, by Bhai Tohra Singh, Rais of Kokri Kalan. A pacca well at village Jandoke, Tahsil Muktsar, at a cost of Rs. 2,000 by Jitta Singh, Mitta Singh and 7 others of Jandoke.

Lahore Division—Lahore District.—A well for drinking purposes in dharmasala at Kanganpur, at a cost of Rs. 400, by Bahadur Chand, Sub-Overseer, resident of Kanganpur.

Rawalpindi Division—Rawalpindi District.—A well at Kahuta, at a cost of Rs. 8,000 by Dr. Prem Singh, of Kahuta.

Attock District.—A serai at the Railway Station at Pindi Sultani, at a cost of Rs. 9,000 by Bhagat Mul Chand, son of Lala Charan Das, of Nara, Tahsil Pindi Gheb.

Multan Division—Lyallpur District.—A well at Jaranwala, on Lyallpur road, at a cost of Rs. 1,100, by Umar Din, faqir of Chak 108-G. B. by contribution. A well on the Lyallpur-Jhang road at a cost of Rs. 800, by Maungal Singh, son of Jowahir Singh, of Chak No. 75-J. B. A well at Dijkot-Sirshamir road, at a cost of Rs. 800 by Natha Singh, son of Nihala, Chak No.-81 J. B. A well on the Lyallpur-Jhang road, at a cost of Rs. 1,500 by Budh Singh, son of Jowahir Singh, Chak No. 68-J. B. A well on Dijkot-Sirshamir road, at cost of Rs. 1,500, by Jai Dev Singh, son of Jagat Singh, Chak No. 80-J. B. A well on Khanuana-Dijkot road, at a cost of Rs. 800, by Sher Singh, Zaildar, Dijkot. A well on Lyallpur-Narwala road, at a cost of Rs. 700, by Buta Ram, shop-keeper, Chak 27-J. B. A well on Lyallpur-Niwan road, in Chak 123-J. B., at a cost of Rs. 900, by Narain Singh, Jat, Chak 123-J. B. A well on Chak Jhumra-Jaranwala road in Chak 61-G. B. at a cost of Rs. 1,000, by Mussammat Bholi, widow of Ilahi Bakhsh of Chak No. 61-G. B. A well in Chak 65-G. B., at a cost of Rs. 1,000, by Bela Singh, son of Gujar Singh, and Indar Singh, son of Buta Singh, of Chak 65-G. B., Tahsil Jaranwala.

Multan District.—A musaffarkhana for the use of Hindus and Muhammadans at Buch Khusrabad with a well, at a cost of Rs. 600, by Malik Ghulam Hussain, son of Malik Khuda Bakhsh. A well for drinking water, at a cost of Rs. 1,200, by Khan Sahib Chaudhri Allah Dad Khan, son of Fateh Khan. A well for drinking water at Jahanian, at a cost of Rs. 1,500, by Khan Sahib Chaudhri Allah Dad Khan, son of Fateh Khan.

SECTION X.

46. The reorganisation of the Public Health Department, which had been under the consideration of Government for some time, was sanctioned during the year under report and came into force from 1st April 1923. This scheme, which abolishes the principle of converting diseases into departments and provides for the supervision of districts by qualified Health Officers, in outline is as follows :—

A. Superior Personnel.—The Province has been divided into three circles corresponding with the Public Works Department circles to which Assistant Directors of Public Health have been allotted as under :—

1. Ambala Circle.
2. Lahore Circle.
3. Rawalpindi Circle.

In addition two technical Assistant Directorships have been constituted as under :—

1. Assistant Director (Technical), Vaccination.
2. Assistant Director (Technical), Epidemiology.

Owing to shortage of funds the two technical Assistant Directors for the present share the charge of the Lahore Circle and Government, up to the end of the year, had not filled up the appointment of Assistant Director, Rawalpindi Circle. For practical purposes therefore this part of the scheme remains a paper affair. Actually only three officers were on duty and as the old staff consisted of four—Chief Plague Medical Officer, Chief Malaria Medical Officer, and two Deputy Sanitary Commissioners—the staff has been reduced by one officer, owing to the post of Assisant Director, Rawalpindi Circle, not having been filled up.

B. District Staff.—This replaces the old plague staff lent by the Medical Department and when fully developed will provide a qualified Medical Officer of Health for each district with the necessary subordinate personnel. At present it consists of 12 qualified Medical Officers of Health (designated Assistant Epidemiologists), eight Sanitary Inspectors, and minor personnel. This staff, in conjunction with the pre-existing four District Medical Officers of Health, provides sixteen qualified officers to serve 28 districts, Simla being excluded. Consequently Assistant Epidemiologists have to hold charge of more than one district for the present, and temporary appointments have to be made to meet emergencies. Year by year, according to financial conditions, the number of District Health Officers will be increased until it reaches 16. Then every district will be in the charge of a whole-time officer with Public Health qualifications—16 styled District Medical Officers of Health and 12 Assistant Epidemiologists. The 12 Assistant Epidemiologists can then be converted into District Medical Officers of Health and this part of the scheme will be complete. During the year under report administrative sanction has been given for the employment of two more District Medical Officers of Health, and in succeeding years, when financial conditions improve, a greater rate of progress can be anticipated.

At the end of the year ten out of the sanctioned strength of twelve Assistant Epidemiologists had been engaged and applications for the remaining two posts were pending. Now that a career in preventive medicine has been opened up many young men are turning to this particular branch of medicine and no dearth of candidates for sanctioned posts is likely to arise.

This part of the scheme has so far been working under serious disadvantages as the necessary office staff for the Assistant Epidemiologists has not yet been sanctioned. These officers have many returns and reports to submit and this deficiency seriously interferes with their field work. Nevertheless the Assistant Epidemiologists have made good, more particularly in the matter of popularising anti-plague measures, and will do even better when they become thoroughly acquainted with the conditions prevailing in their districts.

C. Epidemiological Bureau. -- The Epidemiological Bureau, which replaces the old Malaria Bureau, is staffed by three specially qualified officers working under the Assistant Director of Public Health (Technical) Epidemiology, and functions as the laboratory investigation section of the Department. The work conducted by the Bureau during the year under report may be summarised as follows :--

(1) The study of the mechanism of epidemic malaria was continued by means of field observations and laboratory experiments.

(2) The 19th and 20th Provincial spleen census of school children under ten years of age was carried out in months of June and November, respectively.

(3) A malaria survey of the tract drained by the Hudiara Nullah with the special object of collecting data regarding the incidence of malaria prior to the inception of the scheme for improving the drainage of this tract was carried out.

(4) A study of the bionomics of mosquitoes was commenced having for its objects the determination of the precise part played by cattle in affording a protective screen to man. This investigation, which is being conducted in conjunction with Major R. B. Lloyd, I.M.S., Imperial Serologist to the Government of India, has not yet been completed.

(5) An analysis of the vital statistics of a water-logged area in Gujranwala district was carried out for the Drainage Board.

(6) An epidemiological investigation in connection with the epidemic of relapsing fever in the districts of Muzaffargarh and Dera Ghazi Khan was undertaken and the staff also assisted in suppressing the epidemic.

(7) An inquiry into alleged high mortality among women in Mianwali District was conducted.

(8) Two hundred and ninety-one blood films (53 positive for malaria parasites and 49 for the parasite of relapsing fever) were examined. It is hoped that more use will be made of the Bureau in future by Health Officers and others who now have these special facilities for laboratory diagnosis placed at their disposal.

(9) Scientific memoirs emanating from the Bureau, all of which were published in the Indian Journal of Medical Research during the year under report, comprised a study of the influence of altitude of malaria and two papers detailing results of an analysis of the accuracy attained by the malaria forecasts for the years 1921 and 1922.

Throughout the year I remained in charge of the post of the Director of Public Health, Punjab. Lieutenant-Colonel C. A. Gill, I.M.S., D.P.H., D.T.M. & H., acted as Assistant Director of Public Health, Northern Range, and Professor of Hygiene, King Edward Medical College, Lahore, in addition to his own duties as Chief Malaria Medical Officer from 1st to 19th January, on which date the charge of the office of Assistant Director of Public Health, Northern Range, was transferred to Khan Bahadur Dr. K. A. Rahman, who held charge of the office of Assistant Director of Public Health, Southern Range, in addition to his own duties from the commencement of the year till 19th January, the date on which he was relieved by Captain R. C. Malhotra, I.M.S., O.B.E.

The post of the Chief Plague Medical Officer was also held by Khan Bahadur Dr. K. A. Rahman from 1st January to 15th October, while the charge of the office of Chief Malaria Medical Officer was held by Lieutenant-Colonel C. A. Gill, I.M.S. from the commencement of the year till the 5th April, the date on which he proceeded on leave, handing over charge of the office of Chief Malaria Medical Officer to Khan Bahadur Dr. K. A. Rahman.

The usual inspections were made by the officers of the Department during the year.

Punjab Health Week Committee.—Early in the year it was decided to constitute a Provincial Health Week Committee on the lines of the corresponding English institution. Whilst the scheme was under preparation intimation of Her Excellency the Countess of Reading's intention to constitute Central and Provincial Baby Week Committees was received and at a conference at Government House, presided over by His Excellency the Governor, it was decided that the projected Health Week Committee should also function as the Baby Week Committee. Lady MacLagan having accepted the presidentship of the Health Week Committee steps were taken to make the first "week" in the Punjab a "Baby Week" as part of Her Excellency Lady Reading's great scheme, and to celebrate the "Week" on the dates fixed by the National Baby Week Committee. All local Bodies were circularised through the Commissioners of Divisions and invited to constitute Local Health Week Committees which would be responsible for carrying out of local programmes.

The response was most gratifying and by the end of the year some 36 local committees had been formed for the purpose of celebrating the week. The provincial Health Week Committee, which is a permanent institution, is composed of influential citizens and selected officials, with an executive committee, comprising non-official workers and the heads of special departments, under the Chairmanship of the Hon'ble Minister for Education. The Director of Public Health is *ex-officio* General Secretary of the Committee and has the assistance of the Secretaries of the Punjab Red Cross Society and the Lady Chelmsford League.

Working in conjunction with the National Baby Week Committee programmes for the various local centres were prepared, and with the aid of the funds supplied by the Red Cross Society and the St. John Ambulance Association the Education Bureau of the Public Health Department undertook the preparation of lantern slides, lectures, posters, diagrams, leaflets, etc., for free distribution to local centres.

Education Bureau.—During the year the Bureau worked in conjunction with the Punjab Red Cross Society to supply lantern slides and propaganda material for Local Health Week Committees, and also, in conjunction with the Education Department, prepared a series of standard lectures for the use of District Adult Education Committees. This scheme, which is being financed by the Punjab Red Cross Society so far as public health is concerned, aims at providing all districts with magic lanterns at the rate of one per tahsil and a stock of standard lectures, pamphlets, leaflets, etc. District Education Committees will be formed who will have the care of all this material and arrange for co-ordinated propaganda campaign in the districts.

This scheme has already proved invaluable in assisting the Public Health Department to overcome popular prejudices in the matter of anti-plague measures.

47. Civil Surgeons made 160 inspections of towns and 893 of smaller towns and villages during the year as against 154 of towns and 1,257 of villages in 1922.

Inspection work of Civil Surgeons and Assistant Surgeons.

Assistant Surgeons inspected 22 towns and 125 smaller villages as compared with 146 and 290 respectively in the previous year. The decrease in the number of inspections is due to the transfer of public health duties from the members of the Medical Department to the Assistant Epidemiologists appointed by the Public Health Department.

48. A large quantity of quinine was distributed by local bodies as usual, free of cost, during the year.

Free distribution of quinine.

49. In Sadaura town (Ambala District), Raikot (Ludhiana District), and Dera Ghazi Khan, Dajal and Kot Mithan towns (Dera Ghazi Khan District) some pits and depressions were filled during the year. A marked improvement has been effected at Malakwal in Gujrat District by filling up a very big depression in the centre of the town and some small depressions were filled up in some

Filling of depressions.

of the villages in Gujrat district by the villagers themselves on the advice of the Assistant Epidemiologist. Steps were taken by the Municipal Committees of Sargodha and Rawalpindi to fill up and drain the pits in these towns and in Mianwali town a depression and some pits were filled up at a cost of Rs. 361. The depressions on both sides of the Railway Station Road at Shujabad town (Multan District) were filled up to prevent the collection of rain water near the town, and the Notified Area Committee, Mian Channu, has sanctioned Rs. 1,105 for filling up depressions along the road near the town.

50. The Assistant Director of Public Health (Technical) Vaccination

Lectures on hygiene at Medical College, Lahore. remained *ex-officio* Professor of Hygiene of the King Edward Medical College, Lahore, during the year and delivered the prescribed course of

lectures on Hygiene to the 3rd year M. B., B. S. students. He also conducted a course of practical instruction in the same subject for the post-graduate classes of Assistant Surgeons from October to December. The prescribed course of instruction in theoretical and practical vaccination was also given by him to the 5th year class of M. B., B. S. students.

51. During the year 1923-24 4 superintendents and 20 vaccinators

Lectures on principles of elementary hygiene to vaccinators. received instruction in the principles of elementary hygiene at the Punjab Vaccine Institute, Lahore. Five classes each lasting a fortnight

were held during the months of January, February and March.

52. The number of municipal Medical Officers of Health remained the

Municipal and District Medical Officers of Health. same as last year. No steps were taken by the Municipal Committee, Ambala and Ferozepur to appoint a Medical Officer of Health during

the year as was hoped they would do. The Medical Officers of Health of Ludhiana and Multan returned from England after obtaining a diploma in public health and rejoined their respective appointments during the year under report.

During the year under report proposals for the appointment of two more District Health Officers were considered and approved and necessary provision on account of their pay and establishment has been made in the Budget for 1924-25.

53. Punjab Health School.—Two students received a six months' course of training as Lady Health Visitors, their stipend being paid by the District Boards of Ferozepur and Karnal. Both passed their final examination in April 1923, and one was appointed to Karnal. In October 1923 five students joined the school, four of whom are stipendiaries. The finances of the school are now on a better footing, Government having raised its annual grant from Rs. 6,000 to Rs. 9,000. Public interest in this all-important school has greatly increased and a local committee has been formed for the purpose of raising a building and endowment fund. In this connection negotiations are in progress for the transfer of the Lady Assistant to the Inspector-General of Civil Hospitals to this Department as her work for the most part is concerned with public health. During the year Miss Simon and Miss Raynor, the ladies conducting the school, gave invaluable assistance in the preparation of programmes and material for local Health Week Committees. In addition these ladies, during the school vacation, conducted a propaganda tour in the Simla Hill States.

54. Fairs.—All the important fairs and religious gatherings held in the Province during the year passed off without a hitch or the occurrence of any outbreak of infectious disease. The Pehowa fair, which is held in Karnal district from 13th to 17th March 1923, was attended by the Assistant Director of Public Health, Ambala Circle, from the evening of 15th to the morning of 18th March. The sanitary arrangements at the fair were ably organised by the Civil Surgeon, Karnal.

The annual Baba Farid fair was held at Pakpattan in Montgomery district from 16th to 21st August when the number of persons entering

the Bhihishti Gate was estimated at 74,000. All the sanitary and medical arrangements for the fair were supervised by the Assistant Epidemiologist and the fair passed off without any accident or unusual sickness.

55. The usual class of Sanitary Inspectors was held during the year and 12 out of 22 candidates passed the prescribed examination.

56. No new towns were formed in the vicinity of the North-Western Railway stations in British territory during the year 1923.

57. A synopsis of work done in the provincial Bacteriological Laboratory, King Edward Medical College, Lahore, during the year 1923 is given below :—

The following examinations were made :—

(i) Blood examination	...	...	...	4,267
(ii) Bacteriological examination	...	...	...	911
(iii) Tumours and histological specimens	...	...	...	293
		Total	...	5,471

Sources of specimens sent for examination—

(i) Blood examination :—				
(a) From North-Western Railway	...	...	...	205
(b) From Director of Public Health and other officers of the Public Health Department	...	...	...	7
(c) From outside the Punjab	...	...	...	8
(d) From Civil Hospitals (including Mayo and Albert Victor Hospitals), Dispensaries, Jails, etc.	...	...	...	4,047
		Total	...	4,267

(ii) Bacteriological examinations :—

(a) From North-Western Railway	...	...	88
(b) From Director of Public Health and other officers of the Public Health Department	...	...	19
(c) From outside the Punjab	...	...	10
(d) From Civil Hospitals (including Mayo and Albert Victor Hospitals), Dispensaries, Jails, etc.	...	...	794
		Total	...	911

(iii) Tumours and other histological specimens :—

(a) From North-Western Railway	...	...	Nil
(b) From Director of Public Health and other officers of the Public Health Department	...	...	Nil
(c) From outside the Punjab	...	...	8
(d) From Civil Hospitals (including Mayo and Albert Victor Hospitals), Dispensaries, Jails, etc.	...	...	285
		Total	...	293

Details of various examinations—

I.—Blood examinations :—

(i) Widal Reaction.	Positive.	Negative.	Total.	
(a) B. typhosus	140	371	511	
(b) B. paratyph A	14	435	449	
(c) „ „ B	5	398	403	
(d) B. coli	465	450	915	
(e) B. dysenteriae	3	8	11	
(f) M. melitensis	34	353	387	
2. Wassermann reaction	388	325	713	
3. Miscellaneous including malaria and spirilla	...	...	878
		Grand Total	...	4,267

II—Bacteriological examinations :—

(a) Sputa	...	...	...	...	261
(b) Urines	...	...	...	...	139
(c) Stools	...	...	...	...	203
(d) Water Samples	...	...	...	...	30
(e) Other pathological discharges	...	...	...	...	278
					911

III.—Tumours and other histological examinations :—

(a) Simple tumours	...	...	...	...	18
(b) Malignant tumours	...	...	...	...	110
(1) Carcinomata	...	...	...	...	74
(2) Sarcomata	...	...	...	...	18
(3) Endotheliomata	...	...	...	...	18
(c) Infective granulomata	...	...	...	...	8
(1) Tubercle	...	...	...	...	15
(2) Syphilis	...	...	...	...	6
(3) Leprosy	...	...	...	...	0
(d) Cysts	...	...	...	...	8
(e) Other histological specimens	...	...	...	...	136
		Total	...	...	293
Total number of vaccines prepared	...	...	...	...	364
Number of doses of vaccine issued from the laboratory	...	...	...	...	64,559
Total number of patients treated at the laboratory with tuberculin and other vaccines	...	...	...	...	102

During the year Major E. S. Phipson, D.S.O., I.M.S., Health Officer, Simla, was transferred to Aden as Port Health Officer. During his tenure of office Major Phipson has raised the laboratory section of the municipal public health department to a high degree of efficiency and has done much valuable work in the investigation and suppression of epidemics. Of the remaining Health Officers I wish to specially mention the work of Dr. Thakor, District Medical Officer of Health, Gurgaon, in the suppression of plague, and of Drs. Arora and Rozdon, Health Officers of Lahore and Amritsar, respectively, in organising Health Exhibitions.

Lieutenant-Colonel C. A. Gill, I.M.S., Assistant Director, published some valuable papers on malaria during the year and he directed the activities of the new Epidemiological Bureau with signal success.

Dr. K. A. Rahman, Assistant Director, again accepted double duty uncomplainingly. In recognition of his services the title of "Khan Bahadur" was conferred on him in the Birthday Honours list—an honour greatly appreciated by the Department as a whole.

Office work was unusually heavy on account of the reorganization scheme and "Baby Week" and my thanks are due to Mr. Jennings, Superintendent of my office for voluntarily undertaking the clerical work in connection with "Baby Week" in his out-of-office hours, and to M. Maula Bakhsh, Head Assistant and Pandit Kailas Nath for much valuable work.

W. H. C. FORSTER, Lt.-Col. I. M. S.,
Director of Public Health, Punjab.

The 28th May 1924.

APPENDIX A.

PROCEEDINGS OF THE SANITARY BOARD, PUNJAB.

THE post of Secretary to the Sanitary Board was held by me throughout the year.

The death, which occurred during the year, of Rai Bahadur Dr. Hira Lal, deprived the Board of one of its distinguished members whose valuable services were greatly appreciated by his colleagues.

The Sanitary Board met six times during the year, twice in Simla and four times in Lahore.

The Auditor of the Board continued his work of auditing the accounts of the grant-in-aid given to local bodies for sanitary schemes and was able to recover for the Board certain unspent balances.

The Chemist of the Board continued his work on the analytical standard for milk and ghee in connection with the Adulteration of Food and Drugs Act. The analytical data for milk are now available.

The following is the detail of the grants sanctioned from last year's balance of Rs. 1,35,858-9-9, out of which Re. 0-1-9 lapsed to Government :—

		Rs.	A.	P.
1.	Sargodha Water-supply Extension Scheme	... 60,000	0	0
2.	Additional storage reservoir for Murree Water-Supply	18,071	0	0
3.	Trial boring at Kaithal	... 3,065	0	0
4.	Improvement of rural water-supply of Kangra District	15,000	0	0
5.	Filling of tanks at Palwal	... 9,875	0	0
6.	Construction of a Beef Market at Ambala	... 2,426	0	0
7.	Trial boring at Musa Khel	... 1,368	0	0
8.	Improvement of rural water-supply of Hoshiarpur District.	7,196	8	0
9.	Lala Musa Drainage Scheme	... 485	0	0
10.	Guma Project, Simla Water-supply Extension Scheme	18,372	0	0
Total		1,35,858	8	0

A fresh grant of 4½ lakhs was placed at the disposal of the Sanitary Board for allotment during the financial year 1923-24 and from this sum the following grants amounting to Rs. 1,54,663 were made up to 31st December 1923, leaving a balance of Rs. 2,95,337 which will be accounted for in next year's report :—

		Rs.	A.	P.
1.	Sinking of a deep tube-well at Ambala	... 12,600	0	0
2.	Pay, travelling allowance and contingencies of Auditor and his peon.	4,000	0	0
3.	Pay, travelling allowance and contingencies of Chemist and his staff.	5,000	0	0
4.	Storm water channel at Amritsar	64,205	0	0
5.	Providing an additional storage reservoir for Murree Water-supply.	8,510	0	0
6.	Dera Ghazi Khan Water-supply Extension Scheme	80,411	0	0
7.	Trial boring at Karnal	2,288	0	0
8.	Trial boring at Rohtak	333	0	0
9.	Trial boring at Rohtak for Water-supply Scheme	2,993	0	0
10.	Experimental Sewage farm at Lyallpur	930	0	0
11.	Improvement to Ambala Drainage Scheme	4,775	0	0
12.	Water-supply improvement of Dabwali Mandi	11,515	0	0
13.	Paving of streets of village Fatehpur, Rajputan, Amritsar District.	726	8	0
14.	Surface drainage of Mandi area, Rohtak town	2,736	8	0
15.	Flushing arrangement of Mandi area, Rohtak Town.	225	0	0
16.	Improvement to the Small-pox Hospital at Simla	3,385	0	0
Total		1,54,663	0	0

The projects noted below were accorded administrative approval by the Board :—

		Rs.	A.	P.
1.	Phullerwan Water-supply Scheme	... ...	36,805	0 0
2.	Phullerwan Drainage Scheme	... ...	59,395	0 0
3.	Gujrat Drainage Scheme	... ...	78,292	0 0
4.	Improvements of roads and laying of bricks pavements at Rohtak.	... ...	23,896	0 0
5.	Clearance of village tanks at Hoshiarpur	... ...	14,393	0 0
6.	Drainage Scheme, Montmorencypura, Lyallpur	... ...	25,570	0 0
7.	Providing of a new pumping set for Dera Ghazi Khan Water-supply Scheme.	... ...	22,149	0 0
8.	Sinking of a fifth well in connection with the Rewari Water-works.	... ...	27,035	0 0
9.	Improvements to Sialkot Water-works	... ...	32,009	0 0
10.	Sillanwali Water-supply Scheme	... ...	47,621	0 0
11.	Trial boring, Rawalpindi	... ...	12,884	0 0
12.	Trial-boring, Rawalpindi	... ...	10,727	0 0
13.	Water supply improvement of Dabwali Mandi	... ...	23,030	0 0
14.	Erection of disinfection shed of the Infectious Diseases Hospital at Simla.	... ...	13,927	0 9

The Board accorded revised administrative approval to the following schemes :—

		Rs.	A.	P.
1.	Purchase of land for Rohtak Drainage Scheme	... ...	43,898	0 0
2.	Flushing arrangement at Pattoki	... ...	15,651	0 0
3.	Drainage and earth filling work of blocks 17 and 29 at Sargodha.	... ...	68,179	0 0
4.	Surface drainage and metalling of Mandi area, Rohtak	12,286	0	0

Government in the Civil Department accorded administrative approval to the following schemes :—

		Rs.	A.	P.
1.	Ludhiana Drainage Scheme	... ...	3,03,377	0 0
2.	Rawalpindi Water-supply Extension Scheme	... ...	6,17,440	0 0
3.	Campbellpur Water-supply Extension Scheme	... ...	1,87,785	0 0

Revised administrative approval of the Government in the Civil Department was accorded to the schemes noted below :—

		Rs.	A.	P.
1.	Sargodha Water-supply Extension Scheme	... ...	4,00,163	0 0
2.	Maghiana Drainage Scheme	... ...	2,97,638	0 0
3.	Sialkot Drainage Scheme	... ...	5,07,561	0 0
4.	Sargodha Water-supply Extension Scheme	... ...	3,66,386	0 0

The Secretary to Government, Punjab, in the Public Works Department accorded technical sanction to the Muktsar Water-supply Scheme at a cost of Rs. 1,69,638.

The technical sanction by the Sanitary Engineer to Government, Punjab, was accorded to the undermentioned schemes :—

1.	New pump for Dera Ghazi Khan Water-supply Extension Scheme	... ... ...	... 22,066	Rs.
2.	Providing well No. 3 with Cook patent strainer in Dera Ghazi Khan Water-supply Extension Scheme	... ...	... 3,627	

Little progress has been made with regard to the financing of rural schemes owing to the difficulty experienced in obtaining such schemes from the District Board. The projected increase of district health agencies will gradually rectify matters in this respect, but it will require a really strong public opinion to overcome the apathy of the District Boards. It has become increasingly evident that some form of superior control over Municipal Committees as regards such essential services as Water-supply and Drainage is required. Local Bodies are apparently incapable of appreciating the vital necessity of proper maintenance, examples of machinery being ruined through neglect being numerous. Much the same applies to building regulations as local bodies make no attempt to prevent encroachments and seldom enforce building bye-laws. Some amelioration of the conditions which have been allowed to come into existence through Municipal apathy may be obtained by means of the Town Planning and Improvement Trust Act, but unless Municipal Committees can be made to appreciate their responsibilities by superior authority the evil will rapidly outpace the remedy.

Financial stringency greatly handicapped the Board during the year the number of approved schemes for which no grant-in-aid is available being considerable. As soon as circumstances permit the annual allotment to the Board must be increased if progress is not to be brought to a stand still.

APPENDIX B.

ANNUAL REPORT OF THE SANITARY ENGINEER TO GOVERNMENT, PUNJAB, FOR THE YEAR 1923.

MR. A. R. ASTBURY, M. Inst. C.E., continued to hold the post of Sanitary Engineer, but during his absence on seven months' leave Rai Bahadur Lala Amar Nath Nanda officiated. The services of Mr. G. T. Pound were transferred to the Sanitary Circle and he held charge of the 3rd Sanitary Provincial Division during the period of Mr. Astbury's leave. A new sub-division was formed to carry out the Multan Waterworks and has been placed in the charge of Mr. Pound. The headquarters of the Khushab Sub-Division were transferred from Khushab to Sargodha on 1st March 1923.

During the year about 70 different towns and villages were visited by the staff in connection with sanitary schemes. Projects to the approximate value of Rs. 57,00,000 have been prepared and scrutinised.

The boring work has increased very considerably, improved methods have been adopted and better plant used with the result that borings can now be made much more quickly and cheaply than formerly.

The Lahore Municipality have not yet carried out their share of the much needed improvements to the storm water channel passing through the grounds of Government House. The grounds were again flooded during the monsoon. This work has been in abeyance now for four years, although the channel in question is probably one of the worst mosquito breeding places in the civil station.

Works in No. I Sanitary Provincial Division.—Executive Engineer Mr. J. A. R. Bromage, Assoc. M. Inst. C.E.

Khushab Water-supply, Rs. 1,48,107.—This work was completed early in the year and the running of the scheme has been in charge of this Division for nine months. On a total estimated cost of Rs. 1,48,107 there has been a saving of about Rs. 24,000 which will be utilised in building an additional well. The final completion of the work including laying a suction main in the bed of the River Jhelum was attended with much difficulty. The wells have successfully withstood their first experience of the Jhelum in flood.

Rawalpindi experimental well and temporary supply.—A well 20' diameter has been sunk to the north of Rawalpindi to ascertain if the present water-supply to the city could be increased satisfactorily from the sub-soil. The work was completed in August and the results are very favourable. The construction of the well was difficult and dangerous; rock was encountered at 53 feet below ground and had to be dislodged under a constant heavy discharge of water requiring extensive temporary pumping plant to be operated so that divers could work. The successful termination of this work is due to the courage and perseverance of Mr. Bromage. Owing to the shortage of the present water-supply to Rawalpindi City, on the completion of the experimental well, a temporary pumping plant was installed therein to augment the existing supply. The water so pumped is delivered through a 4" main to the existing duct supply.

Sangla Water-supply, Rs. 79,069.—This is a small scheme using the canal as source and follows the usual lines except that double pumping during closures has been avoided by the device of lowering the filter-beds. Work was started early in the year and the water-works will probably be in operation by February 1924. There has been a saving on the estimate which will be used to cover certain small accessories, refinements and extensions. The completion of the water-works will bring prominently to notice the need for drainage improvements. The standard of drainage maintenance in this town is unusually low.

Tandlianwala Water-supply, Rs. 1,01,173.—This work was commenced early in the year and the distribution mains through the town have been completed. There have been however numerous delays in the completion of the headworks. No special engineering difficulties have been encountered in carrying out this work.

Maghiana Drainage, Rs. 2,97,605.—The burning of bricks for this scheme is in hand and also the reconstruction of the Wakefield Storm Nullah which forms part of the project.

Bhalwal Drainage Scheme, Rs. 33,103.—This work is in hand and should be completed early in 1924.

Phullerwan Drainage Scheme, Rs. 59,395.—This work is in hand and should be completed during the hot weather of 1924.

Sargodha Waterworks Extension, Rs. 3,68,926.—This scheme has received technical sanction and preliminary arrangements are in hand.

Bhalwal Trial Boring, Rs. 1,488.—This work was completed during the year but sweet water was not met.

Musakhel Trial Boring, Rs. 2,737.—This boring was commenced during the year and is nearing completion. New boring plant using the pressure of jacks is being used to force down the pipes in the place of the old method of loading the top of the pipes.

Works in No. II Sanitary Provincial Division.—Executive Engineer in charge Mr. D. A. Howell, Assoc. M. Inst. C. E.

Ambala Waterworks—Additional 40' diameter well at Sarangpura, Rs. 34,589.—This well, which is believed to be the largest in the Province, was sunk to a depth of 55 ft. and was opened by His Excellency the Governor of the Punjab in November 1923. It is now in daily use. The Sanitary Engineer has been responsible for the Sarangpur pumping station of the Ambala Waterworks since November 1923 and upwards of 1,00,000 gallons of water per diem are being supplied to the Ambala Municipal Committee at the rate of 5 annas per 1,000 gallons. The scheme is considered of sufficient promise to warrant the provision of a duplicate pumping plant. The well is being pumped to a depression head not exceeding 4 ft. and careful observations are kept with a view to discovering whether there is any decrease in yield after working under these conditions for some time. Three meters have been installed on the trunk mains at a cost of Rs. 4,290. The work comprises one 6" meter at Handesra and two 4" meters on the trunk line near Ambala City. Regular readings are taken of the quantity of water passing into the area of supply.

Rohtak Drainage.—These works which have been under construction by the Buildings and Roads Branch under supervision of the Sanitary Engineer were completed this year, with the exception of certain intramural drains and pavements and the outfall pumping plant, the construction of which has been postponed. The Rohtak Mandi Pumping Station has been constructed by the Sanitary Engineer. A special sewage pump with rubber vanes known as the "Flexala Pump" has been fitted and has proved satisfactory. The construction of drains and pavements in Rohtak Mandi has been commenced by the Rohtak Municipality under the agency of District Engineer, working under supervision of the Sanitary Engineer. Only dismantling of existing drains and collection of metalling has been carried out so far. The estimated cost is Rs. 12,286.

Muktsar Waterworks, Rs. 2,97,943.—Construction was commenced by this Department in October 1923. Up to the end of the year excavation of the sedimentation and storage tanks has been in hand. A kiln at site of work has been constructed and brick moulding and burning have been commenced. In addition over Rs. 50,000 worth of cast iron pipes and specials and valves have been delivered and stocked at Muktsar.

Hissar District Board, Trial Borings, Rs. 2,618.—Two trial borings were put down to discover sweet water in strata underlying existing wells at Bhattu Kallan and Kalanwali. The bores were put down in existing wells to a depth of 250 ft. below ground level, but, unfortunately, only brackish water was found. It appears that there is very little chance of getting sweet water in the arid portions of the Hissar District by means of comparatively shallow bores and the only hope lies in putting down deep bores, say to 2,000 feet depth, to test the more deep seated strata. It is suggested that such a bore might be put down with the plant which the Military Works Department is arranging to use for a deep boring at Ambala Cantonment towards the cost of which the Sanitary Board has agreed to contribute.

Kharar, Ambala District, Trial Borings, Rs. 7,867.—Three borings were put down by this Department at Kharar with a view of determining how best to improve the water-supply of the town.

The first bore was put down to a depth of 278 feet on the east of the town and disclosed no suitable strata for water-supply.

The second bore was put down to a depth of 287 feet on the banks of the Nalla called Jynta Deviki Rao about a mile west of the town. Here no suitable strata for a tube well supply were found but beds of water bearing sand below sub-soil water level were found which might be suitable for percolation wells. In order to determine whether the beds found in the second bore extended nearer the town a third bore was put down close to the town on the east side near junction of the Kharar-Kurali and Kharar-Morinda roads to a depth of 123 feet and beds of water bearing sand were found which approximately corresponded to those found in the second boring. It is now proposed to put down an experimental well on the site of the third boring and an estimate is being prepared for this.

Kaithal, Ambala District, Trial Boring, Rs. 3,065.—Work has been started on a trial bore to be carried down to a depth of 300 feet at Kaithal in connection with the proposed Kaithal water-supply scheme.

Rewari Waterworks Completion of Works, Rs. 23,879.—A second boring was put down a short distance beyond well No. 4 at Rewari Headworks to a depth of 240 feet. No suitable water bearing strata for a tube-well supply was found but water bearing strata were found at a depth of 50 to 75 feet below the surface into which a percolation well can be sunk. It is therefore proposed to sink a fifth well at the Headworks at or near the site of the boring and connect it to the other wells by a tunnel in which the extension of the suction main will be laid and the Municipal Committee have promised to deposit the funds necessary to execute these new works at an early date. A sufficiency of spare parts have been provided for the existing pumping plant, the Headworks site has been levelled and the existing works finished off. Difficulties have been experienced with the running of the pumping plant but have been overcome without seriously affecting the regular supply of water to the town.

Works in No. III Sanitary Provincial Division.—Executive Engineer in charge Rai Bahadur Lala Amar Nath Nanda, B. A., M. Inst. Engineers (Ind.).

Lahore.—His Excellency the Viceroy visited Lahore during October. Special sanitary arrangements were made for the temporary camp at Government House and proved satisfactory. The experimental disposal of sewage from the Government House drainage system by irrigating crops through sub-surface drains having proved successful, the scheme is being extended. It is hoped that by a careful rotation of crops it will be possible to employ sub-soil irrigation throughout the period when Government House is occupied and thus eliminate completely any nuisance from smell. The pumping plant has been improved and now works automatically, the electric motors being started and stopped by means of float contacts. At the Borstal Institution special emergency water-supply arrangements were made for the temporary Akali camp and maintained till its abolition in April. A new tube-well has been sunk and equipped with a direct coupled motor and centrifugal pump; the old tube-well has been renewed and the manual pump completely overhauled. These measures have now furnished the Borstal Institution with an adequate supply of water for all purposes and removed the former trouble from shortage.

The water-supply of the Lunatic Asylum is also being augmented by fitting pumping plant to a disused percolation well. The distribution is also being extended to the recently erected buildings. The drainage of the asylum is being improved and extended.

Chuharkana tube-well.—The well having been successfully completed has been handed over to the Municipality for flushing the drains. The working and the maintenance of the drainage system at Chuharkhana is now much improved.

Pathankot Experimental well.—This well 16 feet in diameter has been sunk 12 feet below water surface. The yield from the well has proved very plentiful, probably due to sub-artesian conditions. The site of the well is suitable and free from danger of surface contamination. The further sinking of the well has, however, been temporarily suspended for the winter and will be resumed early next summer when spring level will be normal and conditions of working in water more favourable.

Montgomery Central Jail. Improvement to drainage—This work is estimated to cost Rs. 25,247 and was started in July 1923. There were difficulties in getting a suitable contractor to work satisfactorily under jail restrictions, also in obtaining good brick materials from the local kilns. In spite of these draw-backs good progress has been made and the work is expected to be completed before March 1924.

Julundur Drainage.—The construction of this scheme has advanced fairly satisfactorily during this year and a sum of Rs. 4,40,165 has been spent to 31st December 1923. The estimated amount of the works is Rs. 7,57,973 and the funds at our disposal dwindled to Rs. 24,435 in October 1923, when Government sanctioned a loan of Rs. 1,00,000 : work could not, however, be pushed along to the extent required, due partly to shortage of funds which necessitated slackening certain works and stopping others altogether from September 1923 onwards, and partly due to delay for want of land, the acquisition of which was hung up pending decision on questions of alignment by the Municipal Committee.

Hoshiarpur Drainage.—The construction of this scheme has been delayed seriously in respect of several essential sub-works such as the outfall and disposal works for want of land. The estimated cost of the work is Rs. 2,18,867 and expenditure up to 31st December 1923 Rs. 96,975 against an allotment of Rs. 1,70,000 received up to date.

Khemkarn Drainage.—Brick materials having been prepared early in the year, construction was started in March 1923, and good progress was made during the next eight months, when work had to be stopped for want of funds and for want of land along lines of outfall and for disposal works.

Amount of estimate, Rs. 77,673.

Funds placed at our disposal, Rs. 41,000.

Amount spent up to December 1923, Rs. 40,088.

Jandiala Drainage.—This scheme aims at providing an intercepting and outfall system of drains for the whole town, and disposal works for pumping sullage and applying it to land, also a flushing installation consisting of a new well, a tank and a pumping set and pipes.

The estimated cost is Rs. 43,072.

The construction of this scheme was started in July 1923, and the drainage portion has already been completed, while the disposal works are in hand. Work on the flushing installation has, however, been delayed for want of land.

Funds placed at our disposal are Rs. 30,000.

Total cost up to 31st December 1923, Rs. 14,682.

Works in the Multan Sanitary Sub-Division.—Executive Engineer in charge Mr. G. T. Pound, Assoc. M. Inst. C. E.

Multan Waterworks, Rs. 12,57,637.—So far only preliminary work has been done in the collection of materials. The work will be started in 1924.

A. R. ASTBURY,

Sanitary Engineer to Government, Punjab

STATISTICS OF PUNJAB WATERWORKS FOR THE YEAR ENDING 31st MARCH 1923.

No.	Name of municipality.	Population at the census of 1921.	Average daily quantity of water pumped during the year ending 31st March 1923.	Average daily quantity of water supplied per head of population.	Water rate.	Sale of water.	Rent of metres.	Other receipts.	Receipts.			EXPENDITURE.						BALANOR.						
									5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Ambala (Hansdara) ...	28,551	Gallons 197,097	Rs. 6.88	Rs. ...	Rs. 14,545	Rs. ...	Rs. ...	82,159	1,779	1,134	85,072	18,849	59,135	...	1,875	10,308	... 90,167	Rs. 16	Rs. 33,651	Rs. 16	Rs. 19,106	... 5,095	
2	Amritsar ...	157,031	1,866,839	11.25	... Gallons	... 197,097	... 14,545	... ...	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	Rs. 162	Rs. 2,395	Rs. 418	Rs. 16	Rs. 19,106
3	Dalhousie ...	1,457	30,000	20.59	3,842	... 1,866,839	... 11.25	... 11.25	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126		
4	Dera Ghazi Khan ...	20,731	140,309	6.77	... 22,500	... 1,866,839	... 11.25	... 11.25	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126		
5	Dharmshala ...	3,065	80,000	10	... 22,500	... 1,866,839	... 11.25	... 11.25	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126		
6	Gojra ...	7,622	88,000	22	... 22,500	... 1,866,839	... 11.25	... 11.25	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126		
7	Jaranwala ...	4,000	88,000	22	... 22,500	... 1,866,839	... 11.25	... 11.25	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126	... 126		
8	Lahore ...	257,295	3,153,489	1.237	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
9	Ludhiana ...	51,880	613,671	11.11	...	18,521	...	2,235	20,756	11,344	16,777	...	...	...	...	...	...	30,121	...	9,365	...	9,365
10	Lyalpur ...	28,136	347,559	12.28	...	20,405	...	20,405	7,045	2,120	4,319	1,727	4,308	543	...	...	20,062	343	...	4,703	...	4,703
11	Murree ...	2,337	41,000	17.10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
12	Pind Dadan Khan ...	9,919	*	*	*	*	*	*	1,125	1,125	1,163	4,057	...	431	497	...	5,823	...	10,563	1,187	...	
13	Rawalpindi ...	65,251	618,000	11.13	...	10,586	1,164	...	11,750	4,057	...	...	6,506	...	2,342	2,735	...	14,458	...	14,458	...	14,458
14	Rewari ...	23,129	105,000	4.67	4,898	4,466	17	...	200	21,087	9,356	...	1,46,839	2,064	...	1,46,839	2,064
15	Sa. godha ...	17,723	1,24,773.04	6.93	4,534	6,392	183	63	11,172	5,095	9,603	608	506	34	309	...	317,194	...	317,194	...	317,194	...	317,194	
16	Simla ...	26,149	231,443	10	60,275	56,873	8,146	23,609	148,938	72,100	44,033	...	200	
17	Stalkot ...	56,218	767,648	13.7	...	13,639	...	59	13,739	10,614	41,655	...	9,291	437	20	62,025	...	48,286	...	48,286	...	48,286		
18	Toba Tek Singh ...	5,041	7,123	1.41	1,095	555	1,650	1,262	2,292	...	103	2,426	943	1,000	2,426	103	8,273	...	6,623	...	6,623	

REMARKS .

Total expenditure.

Credit balance.

Debit balance.

Water analysis.

Repairs.

Settling tank and filter.

Fumigation.

Total receipts.

Establishment.

Distillation.

Intake.

Water rate.

Population at the census of 1921.

Average daily quantity of water pumped during the year ending 31st March 1923.

Average daily supply per head of population.

Water rate.

Rent of metres.

Other receipts.

Total receipts.

Receipts.

EXPENDITURE.

BALANOR.

§ Includes Rs. 863 (price of water and Rs. 170 (inspection fee).

† Rs. 2,650 are also included the amount being the departmental charges levied by Public Works Department, the waterworks being in the charge of the department.

‡ Includes depreciation funds Rs. 1,000.

(b) Includes Rs. 875 (cost of water).

APPENDIX C.

Statement showing the death rates from cholera, small-pox, fevers and dysentery and diarrhoea for the five years preceding and for the period since the introduction of drainage or water-supply or both in the undermentioned towns.

Towns.	DATE OF COMPLETION OF WORKS OF	AVERAGE ANNUAL DEATH RATE SINCE THE INTRODUCTION OF DRAINAGE OR WATER-SUPPLY OR BOTH.					AVERAGE ANNUAL DEATH RATE FOR THE FIVE YEARS' PERIOD PRECEDING THE INTRODUCTION OF DRAINAGE OR WATER-SUPPLY OR BOTH.					REMARKS.
		Drainage.	Water-supply.	Cholera.	Small-pox.	Fever.	Dysentery and Diarrhoea.	Cholera.	Small-pox.	Fever.	Dysentery and Diarrhoea.	
1	2	3	4	5	6	7	8	9	10	11	12	
Ambala	1895	0·5	0·4	13·1	3·2	0·5	0·4	19·3	6·4	
Simla	1893	1893	0·02	0·4	13·8	1·0	...	1·1	17·1	1·4
Ludhiana	1895	1909	0·3	0·7	18·0	2·0	0·4	2·7	20·8	1·6
Jagraon	1907	...	0·4	1·1	13·5	1·6	0·6	1·5	9·3	2·0
Ferozepore	1916	...	0·6	0·6	12·8	1·4	0·2	0·7	9·8	1·1
Zira	1913	...	0·5	1·6	18·3	0·7	0·3	4·0	16·6	0·9
Fazilka	1913	...	1·1	1·1	23·3	1·9	2·2	2·6	21·4	1·7
Lahore	1921	1881	0·4	0·6	15·6	1·6	0·2	0·6	20·0	1·3
Kasur	1922	...	...	0·1	14·4	1·2	1·6	1·0	21·8	1·0
Amritsar	1885	1904	0·6	1·1	22·2	1·8	0·4	0·7	31·3	1·8
Gurdaspur	1918	...	0·2	0·8	17·5	2·5	0·6	0·3	14·2	3·1
Dalhousie	1894	0·04	0·04	11·9	1·8	...	...	9·6	2·4
Pathankot	1915	...	1·4	0·5	19·9	3·1	0·8	0·7	12·4	2·8
Sialkot	1915	0·6	1·2	12·5	2·2	3·0	1·2	9·6	2·3	
Gujranwala	1892	...	0·6	0·9	18·6	1·2	0·5	0·6	19·7	1·7
Gujrat	1906	...	0·9	0·3	19·6	1·8	0·3	0·2	16·9	1·9
Bhera	1917	...	0·02	0·2	21·9	1·8	0·03	0·7	17·8	1·7
Sargodha	1907	1907	0·01	0·3	7·6	0·7	Not available.			
Jhelum	1908	...	0·2	0·5	13·8	1·7	1·5	0·3	14·0	2·1
Pind Dadan Khan	1909	1909	0·1	0·8	20·6	2·8	1·1	0·7	23·1	3·6
Rawalpindi	1907	1887	0·6	0·3	18·6	2·3	0·5	0·1	16·4	3·4
Murree	1894	0·7	0·1	15·4	1·9	0·7	0·4	14·8	0·9
Mianwali	1904	0·2	0·5	19·8	2·0	Not available.			
Lyallpur	1904	1904	0·1	0·6	11·0	0·8	*2·8	*0·4	*16·3	*2·1
Gojra	1916	0·2	0·4	7·2	0·6	†...	†...	†0·5	†...
Multan	1907	...	0·2	0·8	18·2	2·4	0·01	1·9	16·9	2·4
Dera Ghazi Khan	1913	0·04	0·4	15·6	2·1	2·0	0·6	15·9	1·6
Kalka	1890	0·4	0·1	14·1	2·3	1·7	0·2	15·2	3·9

* Figures available for four years only.

† Figures for 1914 and 1915 only.

ANNUAL FORM No. I.

STATEMENT SHOWING THE BIRTHS REGISTERED IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923.

2	3 POPULATION ACCORDING TO CENSUS OF 1921.*			4 NUMBER OF BIRTHS REGISTERED.			5 RATIO OF BIRTHS PER 1,000 OF POPULATION.			6	7	8	9 MEAN RATIO OF BIRTHS PER 1,000 DURING PREVIOUS FIVE YEARS.			10
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AMBALA DIVISION.																
Hissar	... 435,562	381,248	816,810	18,595	16,377	34,972	22·8	20·0	42·8	113·5	9·2	...	20·9	18·8	39·7	1
Rohtak	... 417,379	354,893	772,272	18,893	17,439	36,332	24·5	22·6	47·0	108·3	15·5	...	22·8	20·9	43·7	2
Gurgaon	... 367,800	314,203	682,003	17,999	16,161	34,160	26·4	23·7	50·1	111·4	21·4	...	22·9	20·6	43·5	3
Karnal	... 453,637	375,089	828,726	18,351	16,512	34,863	22·1	19·9	42·1	111·1	2·0	...	22·3	19·8	42·1	4
Ambala	... 360,967	280,942	641,909	13,994	12,367	26,361	21·8	19·3	41·1	113·2	7·9	...	20·4	18·4	38·8	5
Simla	... 27,599	13,338	40,937	525	480	1,005	12·8	11·7	24·5	109·4	6·8	...	10·2	9·0	19·2	6
JULLUNDUR DIVISION.																
Kangra	... 393,121	371,626	764,747	15,085	14,067	29,152	19·7	18·4	38·1	107·2	10·2	...	18·0	16·6	34·6	7
Hoshiarpur	... 498,662	428,757	927,419	22,536	20,475	43,011	24·3	22·1	46·1	110·1	18·4	...	21·2	18·9	40·1	8
Jullundur	... 450,045	363,480	813,525	19,864	17,825	37,689	24·3	21·9	46·3	111·4	14·9	...	21·8	20·4	42·2	9
Ludhiana	... 318,845	248,777	567,622	13,380	12,561	25,941	23·6	22·1	45·7	106·5	9·9	...	21·8	19·9	41·7	10
Ferezepore	... 598,760	480,547	1,079,307	20,976	18,329	39,305	19·4	17·0	36·4	114·4	3·3	...	19·9	17·6	37·6	11
LAHORE DIVISION.																
Lahore	... 636,596	480,134	1,116,730	22,603	20,412	43,018	20·2	18·3	38·5	110·7	8·6	...	21·5	19·2	40·7	12
Amritsar	... 518,500	409,898	928,398	24,089	22,015	46,104	25·9	23·7	49·7	109·4	17·1	...	23·4	21·3	44·8	13
Gurdaspur	... 467,576	380,238	847,814	20,172	18,417	38,589	23·8	21·7	45·5	109·5	15·3	...	23·3	21·3	44·7	14
Sialkot	... 472,231	396,703	868,934	19,780	18,156	37,936	22·8	20·9	43·7	108·9	...	11·7	23·6	21·5	45·1	15
Gujranwala	... 348,695	274,886	623,551	15,653	13,984	29,637	25·1	22·4	47·5	111·9	11·1	...	21·3	18·8	40·1	16
Sheikhupura	... 351,259	277,163	628,422	13,95	11,578	24,673	20·8	18·4	39·3	113·1	15·2	...	18·7	16·1	34·8	17
RAWALPINDI DIVISION.																
Gujrat	... 438,550	385,496	824,046	18,242	16,520	34,762	22·1	20·0	42·2	110·4	16·4	...	19·0	17·1	36·2	18
Shahpur	... 392,086	327,832	719,918	15,542	13,643	29,185	21·5	19·0	40·5	113·9	18·6	...	18·5	16·1	34·6	19
Jhelum	... 240,464	235,104	475,568	10,455	9,136	19,531	22·0	19·2	41·2	114·4	8·7	...	18·7	16·3	35·0	20
Rawalpindi	... 292,317	248,376	540,693	11,832	10,633	22,470	21·9	19·7	41·6	111·2	9·3	...	18·3	16·7	34·9	21
Attock	... 262,028	246,001	508,029	11,432	9,556	20,988	22·5	18·8	41·3	119·6	15·9	...	18·1	15·7	33·9	22
Mianwali	... 190,021	168,184	358,205	8,879	7,785	16,664	24·3	21·7	46·5	114·1	23·0	...	21·1	18·6	39·7	23
MULTAN DIVISION.																
Montgomery	... 393,372	320,414	713,786	17,239	14,728	31,967	24·2	20·6	44·8	117·0	19·9	...	19·0	16·3	35·3	24
Lyallpur	... 522,707	413,235	935,942	23,934	21,823	45,757	25·6	23·3	48·9	109·7	23·5	...	24·4	22·0	46·4	25
Jhang	... 305,483	265,076	570,559	14,497	12,731	27,228	25·4	22·8	47·7	113·9	22·6	...	21·3	19·1	40·4	26
Multan	... 484,581	399,593	884,174	20,743	17,471	38,214	23·5	19·8	43·2	118·7	18·6	...	19·7	17·2	36·9	27
Muzaffargarh	... 308,605	259,873	568,478	10,478	8,690	19,168	18·4	15·3	33·7	120·6	...	4·6	17·2	14·5	31·6	28
Dera Ghazi Khan	... 257,336	211,666	469,052	9,320	7,525	16,845	19·9	16·0	35·9	123·9	6·7	...	15·5	12·3	27·7	29
Total	... 11,204,834	9,312,772	20,517,606	4,68,186	417,401	885,587	22·8	20·3	43·2	112·2	12·3	...	20·8	18·5	39·3	

* Excluding population of Military Cantonments.

STATEMENT OF BIRTHS AND DEATHS REGISTERED IN EACH

1 Number.	2 DISTRICTS.	3 Area in square miles.	4 Average population per square mile.	5 POPULATION (CENSUS 1921).			6 BIRTHS.		7 NUMBER OF DEATHS		
				5 Males.	6 Female.	7 Total.	8 Total number.	9 Birth-rate per 1,000 of population.	10 Males.	11 Females.	12 Total.
1	2	3	4	5	6	7	8	9	10	11	12
AMBALA DIVISION.											
1	Hissar ...	5,213	157	435,562	381,248	816,810	34,972	42·8	13,870	13,539	27,409
2	Rohtak ...	2,919	265	417,379	354,893	772,272	36,332	47·0	12,696	11,611	24,307
3	Gurgaon ...	2,263	301	367,800	314,203	682,003	34,160	50·1	10,27	9,516	19,538
4	Karnal ...	3,125	265	453,637	375,059	828,726	34,863	42·1	17,171	16,018	33,189
5	Ambala ...	1,882	341	360,967	280,942	641,909	26,361	41·1	11,151	10,167	21,318
6	Simla ...	101	405	27,599	13,338	40,937	1,005	24·5	420	306	720
JULLUNDUR DIVISION.											
7	Kangra ...	9,978	77	393,121	371,626	764,747	29,152	38·1	11,016	10,314	21,330
8	Hoshiarpur ...	2,247	413	492,662	423,757	927,419	43,011	46·4	13,647	12,309	25,956
9	Jullundur ...	1,431	568	450,045	363,480	813,525	37,689	46·3	13,268	12,255	25,523
10	Ludhiana ...	1,452	391	318,845	248,777	567,622	25,941	45·7	10,404	9,923	20,321
11	Ferozepore ...	4,286	252	598,760	480,547	1,079,307	39,305	36·4	18,580	17,099	35,679
LAHORE DIVISION.											
12	Lahore ...	2,691	415	636,596	480,134	1,116,730	43,018	38·5	17,488	15,844	33,339
13	Amritsar ...	1,593	583	518,500	409,893	928,398	46,104	49·7	15,637	14,632	30,269
14	Gurdaspur ..	1,889	449	467,576	350,238	847,814	38,589	45·5	13,383	12,225	25,608
15	Sialkot ...	1,206	721	472,231	396,703	868,934	37,936	43·7	23,196	24,952	48,149
16	Gujranwala ...	2,309	270	348,695	274,886	623,581	29,637	47·5	11,553	11,133	22,686
17	Sheikhupura ...	3,198	197	351,259	277,163	622,422	24,673	39·3	7,951	7,210	15,161
RAWALPINDI DIVISION.											
18	Gujrat ...	2,563	322	438,550	385,496	824,046	34,762	42·2	11,075	10,167	21,242
19	Shahpur ..	4,476	161	392,086	327,832	719,918	29,185	40·5	8,409	7,354	15,763
20	Jhelum ...	2,773	172	240,464	235,104	475,568	19,591	41·2	7,728	7,736	15,464
21	Rawalpindi ...	2,023	267	292,317	248,376	540,693	22,470	41·6	8,930	8,522	17,452
22	Attock ...	4,117	123	262,028	246,001	508,029	20,958	41·3	6,820	6,664	12,884
23	Mianwali ..	5,395	66	191,021	168,184	358,205	16,664	46·5	4,403	4,021	8,424
MULTAN DIVISION.											
24	Montgomery ...	4,623	154	393,372	320,414	713,786	31,967	44·8	9,243	8,509	17,752
25	Lyallpur ..	2,759	339	522,707	413,235	935,912	45,757	48·9	12,216	11,530	23,776
26	Jhang ...	3,452	168	305,483	255,076	570,559	27,228	47·7	7,506	6,801	14,307
27	Multan ...	5,939	149	484,581	399,503	884,174	38,214	48·2	11,425	10,342	21,767
28	Muzaffargarh ...	6,052	94	308,605	250,873	568,478	19,168	33·7	12,072	9,705	21,777
29	Dera Ghazi Khan ...	5,325	88	257,386	211,666	469,052	16,845	35·9	7,560	6,143	13,703
	Total ...	97,280	211	11,204,834	9,312,772	20,517,606	885,587	43·2	323,845	306,017	634,862

NOTE.—Those born dead are not included.

No. II.

DISTRICT OF THE PUNJAB DURING THE YEAR 1923.

Number of deaths of males to every 100 deaths of females.	DEATHS PER 1,000 OF POPULATION FROM												MEAN RATIO OF DEATHS PER 1,000 DURING PREVIOUS FIVE YEARS.	11	
	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory dis- eases.	Injuries.	All other causes.	Males.	Females.	Total.	Males.	Females.	Total.	
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
102.4	...	0.2	0.01	26.5	0.4	0.8	0.3	5.3	31.8	35.5	33.6	38.8	43.7	41.6	1
109.3	...	0.02	3.6	20.2	0.3	1.1	0.3	6.0	30.4	32.7	31.5	42.1	50.5	46.3	2
104.9	...	0.1	1.5	15.7	0.4	1.3	0.4	9.4	27.3	30.4	28.7	55.8	65.1	60.1	3
107.2	...	0.001	0.4	32.5	0.2	0.9	0.2	5.9	37.9	42.7	40.1	46.2	52.0	45.8	4
109.7	...	0.02	...	16.1	0.6	10.7	...	5.9	30.9	36.1	33.2	41.2	47.2	43.9	5
137.2	...	...	...	11.7	1.2	1.5	...	3.4	15.2	22.9	17.7	29.1	37.9	32.0	6
106.8	...	0.04	...	19.1	1.9	2.8	0.6	3.6	22.0	27.8	27.9	41.7	41.4	41.6	7
110.9	0.001	0.3	0.01	26.7	0.01	2.3	0.2	4.4	27.4	28.7	28.0	33.2	34.2	33.7	8
108.3	0.002	0.1	0.01	22.8	0.4	2.2	0.3	5.6	29.5	33.7	31.4	31.5	36.1	33.6	9
104.8	...	0.3	0.003	22.4	0.9	3.0	0.2	9.1	32.6	39.9	35.8	36.3	44.0	39.7	10
108.7	0.001	0.1	...	24.5	0.4	1.3	0.3	6.5	31.0	35.6	33.1	31.7	35.6	33.4	11
110.4	0.001	0.2	0.5	19.9	0.6	2.5	0.3	5.8	27.5	33.0	29.9	33.0	37.9	35.1	12
106.9	...	0.1	0.02	22.1	0.6	3.9	0.3	5.6	30.2	35.7	32.6	34.9	38.8	36.6	13
109.5	...	0.1	0.03	17.5	2.6	1.5	0.2	8.4	28.6	32.2	30.2	37.2	39.4	35.8	14
93.0	...	0.2	25.8	20.1	0.8	1.9	0.3	6.3	49.1	62.9	55.4	32.7	33.9	33.2	15
103.8	0.001	0.2	6.7	23.1	0.4	1.1	0.5	4.6	33.1	40.5	36.4	34.7	37.3	35.8	16
110.3	...	0.1	1.0	18.2	0.2	0.5	0.2	4.0	22.6	26.0	24.1	26.2	27.6	26.8	17
108.9	0.001	0.01	5.0	14.8	0.3	2.3	0.3	3.1	25.3	26.4	25.8	32.8	33.6	33.2	18
114.3	0.002	0.03	3.0	13.1	0.2	0.2	0.4	5.1	21.5	22.4	21.9	29.3	30.3	29.8	19
99.9	...	0.02	10.5	14.8	0.3	2.2	0.5	4.3	32.1	32.9	32.5	38.4	36.9	37.7	20
104.8	0.001	0.04	4.9	17.0	3.1	3.2	0.5	3.5	30.6	34.3	32.3	35.4	38.7	36.9	21
112.4	...	0.02	2.1	18.6	0.02	1.2	0.4	3.0	26.0	24.7	25.4	34.7	33.9	34.3	22
109.5	...	0.01	...	18.7	0.2	0.7	0.3	3.6	23.2	23.9	23.5	35.0	36.1	35.6	23
108.6	...	0.2	0.6	20.4	0.1	0.3	0.3	3.1	23.5	26.6	24.9	26.7	28.2	27.3	24
105.7	...	0.1	2.8	16.1	0.1	0.9	0.3	5.1	23.4	23.0	25.4	27.5	31.6	29.3	25
110.4	...	0.04	0.2	16.2	0.4	2.1	0.4	5.8	24.6	25.7	25.1	29.3	30.8	30.0	26
110.5	0.001	0.1	0.04	19.0	0.3	0.9	0.4	4.0	23.6	25.9	24.6	31.0	32.9	31.8	27
124.4	...	0.01	...	35.9	0.1	0.2	0.4	1.7	39.1	37.4	38.3	34.1	33.8	33.9	28
123.1	...	0.004	...	26.5	0.3	0.6	0.3	1.5	29.4	29.0	29.2	34.7	34.7	34.7	29
107.5	0.001	0.1	2.4	20.5	0.6	1.9	0.3	5.2	20.4	32.9	30.9	35.0	38.1	36.4	

in this or any other statement.

ANNUAL FORM No. III.

DEATHS REGISTERED IN THE DISTRICTS OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

1	2	3												4	5
Number.	DISTRICT.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total deaths registered during the year.	Number.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AMBALA DIVISION.															
1	Hissar	1,439	1,095	1,496	1,573	1,959	1,907	1,623	1,819	3,765	4,557	3,435	2,741	27,409	1
2	Rohitak	1,130	874	1,344	1,962	2,432	2,245	1,571	1,385	2,243	3,046	2,906	3,164	24,307	2
3	Gurgaon	1,192	1,110	1,593	1,602	1,737	1,811	1,255	1,232	1,858	2,307	1,860	2,026	19,583	3
4	Karnal	1,898	1,251	1,442	1,515	2,047	2,332	1,815	1,616	3,846	7,138	4,536	3,723	33,189	4
5	Ambala	1,413	1,028	1,349	1,180	1,508	1,518	1,281	1,040	1,979	4,270	2,625	2,127	21,318	5
6	Simla	47	52	55	55	86	70	77	76	58	61	43	46	726	6
JULLUNDUR DIVISION.															
7	Kangra	1,493	1,333	1,506	1,264	1,985	2,060	1,513	1,632	2,062	2,798	1,987	1,697	21,330	7
8	Hoshiarpur	1,714	1,403	1,639	1,709	2,409	2,077	1,832	1,659	2,462	3,988	2,579	2,485	25,953	8
9	Jullundur	1,445	1,162	1,210	1,262	1,990	1,874	1,747	1,919	2,923	4,217	3,083	2,691	25,523	9
10	Ludhiana	985	752	876	981	1,274	1,392	1,240	1,391	2,465	3,850	3,062	2,059	20,327	10
11	Ferozepore	2,298	1,889	1,977	1,860	2,545	2,484	2,102	2,180	3,854	5,136	5,083	4,271	35,679	11
LAHORE DIVISION.															
12	Lahore	2,201	1,563	1,065	1,540	2,594	2,944	2,481	2,242	3,210	4,708	4,276	4,508	33,332	12
13	Amritsar	1,714	1,313	1,327	2,145	3,006	2,988	2,241	2,367	3,010	3,742	3,449	2,967	30,269	13
14	Gurdaspur	1,496	1,043	1,271	1,117	2,472	2,199	1,709	1,828	2,854	4,370	3,041	2,208	25,608	14
15	Sialkot	1,931	2,061	5,320	10,951	8,369	3,350	1,604	1,360	2,490	3,830	3,852	3,024	48,148	15
16	Gujranwala	1,051	830	1,002	1,973	2,534	1,808	1,204	1,083	1,344	2,751	3,698	3,408	22,686	16
17	Sheikhupura	868	697	506	978	1,344	1,078	914	901	1,136	2,359	2,192	2,188	15,161	17
RAWALPINDI DIVISION.															
18	Gujrat	1,427	1,085	1,244	1,654	2,913	2,112	1,213	1,188	1,432	1,865	2,232	2,877	21,242	18
19	Shahpur	1,302	1,039	1,092	1,327	1,975	1,981	1,001	861	955	1,109	1,430	1,991	15,763	19
20	Jhelum	1,034	830	867	2,014	2,182	1,413	714	654	899	1,546	1,418	1,893	15,464	20
21	Rawalpindi	1,242	1,045	1,197	940	1,244	1,472	1,005	923	1,457	2,287	2,043	2,596	17,452	21
22	Attock	1,103	869	982	765	1,046	979	726	696	820	1,170	1,597	2,131	12,884	22
23	Mianwali	904	729	685	518	624	501	527	491	559	759	921	1,206	8,424	23
MULTAN DIVISION.															
24	Montgomery	1,179	999	893	778	1,165	1,149	1,046	935	1,296	2,367	2,773	3,172	17,752	24
25	Lyallpur	1,587	1,411	1,654	1,854	2,755	1,968	1,596	1,417	1,723	2,239	2,709	2,863	23,776	25
26	Jhang	1,062	934	870	796	1,088	1,016	870	813	957	1,399	1,833	2,669	14,307	26
27	Multan	1,810	1,405	1,281	1,022	1,732	1,485	1,209	1,132	1,451	2,245	3,004	4,041	21,767	27
28	Muzaffargarh	1,702	1,816	2,213	2,560	3,154	2,233	1,361	871	811	1,240	1,602	2,214	21,777	28
29	Dera Ghazi Khan	980	1,058	999	1,384	1,719	1,354	931	569	663	986	1,337	1,723	18,703	29
Total for the Province.		39,647	32,677	38,911	49,279	61,888	51,530	38,408	36,280	54,587	82,340	74,606	74,709	634,832	
Ratio of deaths per 1,000 in each month.		1.93	1.59	1.90	2.40	3.02	2.51	1.87	1.77	2.66	4.01	3.64	3.64	30.94	

ANNUAL FORM No. IV.

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED AGE
PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923.

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED AGE

D. IV.

PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923.

4

UNDER ONE YEAR.

Muhammadans.		NOT EXCEEDING ONE MONTH.				OVER ONE MONTH AND NOT EXCEEDING SIX MONTHS.											
		Hindus.		Indian Christians.		Other Classes		Muhammadans.		Hindus.		Indian Christians.		Other Classes.			
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Number.
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	
542	512	1,240	933	...	...	...	...	385	361	591	493	...	...	...	...	1
401	219	1,675	1,530	3	2	...	...	203	94	625	595	1	1	...	...	2
341	249	920	791	...	...	...	...	225	209	659	552	...	...	...	...	3
479	448	909	863	...	...	...	...	654	668	1,539	1,351	1	1	...	...	4
471	399	1,094	994	...	...	...	...	283	247	565	591	...	...	...	...	5
5	5	8	9	3	4	...	...	2	1	4	2	...	1	...	...	6
110	80	1,550	1,228	...	...	...	1	80	68	744	703	...	...	...	...	7
566	433	1,503	1,381	4	2	...	...	441	413	884	671	2	...	...	...	8
1,159	947	1,323	1,409	...	...	...	...	398	343	499	475	...	...	...	...	9
458	420	976	885	1	...	...	...	303	216	734	713	...	1	...	...	10
1,115	922	1,148	1,015	3	2	...	...	453	601	824	557	1	1	...	...	11
1,663	1,551	361	316	20	17	...	...	985	879	211	227	16	16	...	...	12
1,280	1,225	1,275	1,012	4	7	...	...	531	436	574	497	3	9	...	...	13
972	833	836	780	132	61	3	2	423	425	469	349	53	27	...	2	14	
1,033	980	604	644	150	150	12	8	886	823	330	294	181	175	19	15	15	
870	757	373	261	73	95	16	10	792	611	169	236	21	39	8	10	16	
633	536	173	141	33	33	26	22	459	400	155	153	36	32	14	15	17	
1,078	902	136	111	1	3	1	1	580	504	88	52	1	...	...	...	18
1,156	881	190	150	22	14	55	37	493	398	67	52	5	7	18	15	19	
749	661	67	49	...	...	...	...	441	347	38	22	1	2	...	...	20
1,013	873	112	101	6	3	4	4	572	457	92	65	2	1	2	2	21	
978	798	54	39	...	...	1	...	334	298	24	23	...	...	...	...	22
862	705	100	81	...	...	...	...	421	327	48	32	...	...	...	...	23
914	1,010	453	271	28	3	...	...	540	405	263	233	6	5	1	...	24
1,231	1,104	846	731	37	28	2	1	631	521	369	365	14	15	1	1	25	
1,196	1,048	168	184	...	...	...	...	549	551	168	196	...	...	...	...	26
1,810	1,513	226	229	8	6	2	2	748	633	296	242	12	7	3	1	27	
694	468	169	119	1	...	...	...	699	544	121	70	...	...	...	...	28
561	407	114	104	...	...	2	3	658	497	88	88	2	1	1	1	29
24,340	20,889	18,608	16,361	534	430	124	91	14,174	12,277	11,238	9,899	356	340	68	62		
...		
...	...	...	...	...	...	...	...	...	Not available.	...	...	...	...	...	...

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED AGE

4—concluded.

UNDER ONE YEAR—CONCLUDED.

Number.	Districts.	OVER SIX MONTHS AND UNDER TWELVE MONTHS.								TOTAL UNDER ONE YEAR.							
		Muhamma-dans.		Hindus.		Indian Christians.		Other classes.		Muhammadans.		Hindus.		Indian Christians.			
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	2	29	30	31	32	33	34	35	36	37	38	39	40	41	42		
1	Hissar ...	298	318	533	527	...	...	...	...	1,325	1,191	2,364	1,953	...	...
2	Rohtak ...	87	65	607	539	2	1	...	...	691	378	2,307	2,664	6			
3	Gurgaon ...	205	270	718	557	...	...	...	...	771	728	2,297	1,900	...	...
4	Karnal ...	383	313	782	704	...	1	...	...	1,516	1,429	3,330	2,918	1			
5	Ambala ...	233	225	589	510	...	...	...	...	937	871	2,248	2,095	...	...
6	Simla ...	1	..	2	...	...	...	...	...	8	6	14	11	3			
7	Kangra ...	46	58	640	601	1	...	...	1	236	206	2,934	2,532	1	...		
8	Hoshiarpur ...	410	353	780	604	1	...	...	...	1,417	1,199	3,167	2,656	7			
9	Jullundur ...	496	459	629	585	...	...	...	...	2,053	1,749	2,456	2,49	...	...
10	Ludhiana ...	428	372	433	411	1	...	...	...	1,189	1,008	2,143	2,009	2			
11	Ferozepore ...	718	740	816	587	2	1	...	...	2,291	2,263	2,788	2,159	6			
12	Lahore ...	1,238	1,055	241	208	20	24	...	...	3,886	3,488	813	751	56			
13	Amritsar ...	700	65	629	560	8	9	...	...	2,511	2,286	2,478	2,069	15			
14	Gurdaspur ...	562	596	69	504	81	43	3	...	1,957	1,854	1,914	1,633	266	18		
15	Sialkot ...	1,039	995	412	409	81	85	7	16	2,958	2,798	1,346	1,347	412	41		
16	Gujranwala ...	535	466	135	113	20	50	7	5	2,197	1,834	677	610	114	18		
17	Sheikhupura ...	516	449	164	135	33	31	22	25	1,608	1,385	492	429	107	9		
18	Gujrat ...	573	447	88	61	2	...	...	...	2,231	1,853	312	224	4			
19	Shahpur ...	633	529	129	87	18	11	30	29	2,282	1,808	386	289	45	3		
20	Jhelum ...	203	204	23	26	...	...	...	...	1,393	1,212	128	97	1			
21	Rawalpindi ...	257	255	54	58	1	2	2	...	1,842	1,585	258	224	9			
22	Attock ...	206	162	18	14	...	...	...	1	1,518	1,258	96	76	...	...
23	Mianwali ...	174	160	28	39	...	...	...	...	1,457	1,192	176	152	...	...
24	Montgomery ...	411	296	296	278	3	12	...	...	1,865	1,711	1,012	782	37	2		
25	Lyallpur ...	552	543	509	424	23	18	2	2	2,414	2,168	1,724	1,520	74	6		
26	Jhang ...	548	445	134	147	1	...	...	...	2,293	2,041	470	527	1	...		
27	Multan ...	701	684	49	38	5	1	1	...	3,259	2,830	571	509	25	1		
28	Muzaffargarh ...	346	312	43	41	...	1	...	...	1,739	1,324	333	230	1			
29	Dera Ghazi Khan ...	351	297	44	41	...	...	...	4	1,570	1,201	246	233	...	...
	Total ...	12,950	11,693	10,134	8,808	303	290	74	83	51,464	44,859	39,380	35,068	1,193	1,06		
Population according to Census of 1921.		Not available								240,139	232,641	176,259	168,581	7,514	7,24		
Ratio per 1,000 living for the Province.										214.31	192.82	226.83	209.02	158.77	146.2		

IV—CONTINUED.

PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923—CONTINUED.

		5								6				
		ONE YEAR AND UNDER FIVE YEARS.								FIVE YEARS AND UNDER TEN YEARS.				
Other classes.		Muhammadans.		Hindus.		Indian Christians.		Other classes.		Muhammadans.		Hindus.		Number.
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
43	44	45	46	47	48	49	50	51	52	53	54	55	56	1
...	...	1,324	1,288	2,369	2,418	...	...	...	...	301	329	598	592	1
...	...	280	184	1,979	1,904	6	8	...	...	204	97	983	1,001	2
...	...	503	580	1,143	1,132	...	...	...	...	103	251	442	353	3
...	...	1,049	825	2,577	2,565	...	...	...	...	83	141	296	283	4
...	...	511	638	1,501	1,621	1	...	...	...	104	97	877	370	5
...	...	...	1	...	...	...	...	...	...	...	...	2	...	6
...	2	48	23	705	713	...	...	...	...	38	32	657	635	7
...	...	915	966	1,883	1,855	6	3	...	...	190	203	355	325	8
...	...	1,470	1,441	1,601	1,510	...	...	...	...	331	326	307	286	9
...	...	498	530	567	427	1	1	...	...	218	348	478	309	10
...	...	2,824	2,158	2,023	2,188	5	3	...	...	783	488	426	684	11
...	...	3,018	3,116	1,273	843	77	72	...	...	443	452	243	197	12
...	...	1,932	1,959	1,825	1,542	8	...	...	...	390	421	480	374	13
6	4	1,500	1,698	1,486	1,396	171	60	4	4	308	395	330	324	14
38	39	2,444	2,858	888	799	503	510	22	15	1,141	1,311	625	816	15
31	25	2,326	2,496	233	177	77	45	10	10	422	621	175	183	16
62	62	679	596	192	182	43	38	25	26	333	361	128	106	17
1	1	1,751	1,508	179	182	2	2	...	1	581	624	65	47	18
103	81	890	792	129	104	20	16	41	42	463	501	47	38	19
...	...	841	811	76	73	...	...	...	...	536	659	35	36	20
8	6	601	704	130	131	4	2	4	4	451	494	59	68	21
1	1	891	797	77	56	...	...	1	2	394	383	21	21	22
...	...	528	555	56	56	...	...	...	...	198	172	9	22	23
1	...	1,709	1,539	489	654	48	10	23	2	391	305	208	290	24
5	4	1,627	1,403	1,089	1,231	128	181	7	8	553	549	164	187	25
...	...	850	787	98	108	...	...	...	...	410	418	64	67	26
6	3	1,621	1,472	532	514	6	5	1	...	490	362	86	100	27
...	...	1,018	904	83	90	...	...	...	...	417	380	21	27	28
4	8	820	678	93	75	...	...	4	1	285	248	31	21	29
266	236	24,468	33,306	25,277	24,546	1,106	956	142	115	10,561	10,918	7,712	7,712	
52	20	587,475	566,315	430,242	408,415	18,176	17,236	167	98	950,073	881,383	688,426	592,470	
?	?	58.67	58.81	58.75	60.10	60.85	55.47	850.30	?	11.12	13.13	11.28	13.02	

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED AGES

1	2	6—concluded.				7							
Number.	Districts.	FIVE YEARS AND UNDER TEN YEARS—continued.				TEN YEARS AND UNDER FIFTEEN YEARS.							
		Indian Christians.		Other classes.		Muhammadans.		Hindus.		Indian Christians.		Other class.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	2	57	58	59	60	61	62	63	64	65	66	67	
1	Hissar	...	...	...	...	116	121	445	454	...	...	...	...
2	Rohtak	...	7	5	...	187	160	600	530	2	1	...	...
3	Gurgaon	...	...	...	...	199	170	251	260	...	1	...	...
4	Karnal	...	...	...	...	186	177	350	320	...	...	...	...
5	Ambala	...	...	...	...	99	78	167	181	...	...	...	...
6	Simla	...	...	...	...	1	...	1	1	...	...	...	...
7	Kangra	...	...	...	...	50	44	649	653	...	1	...	...
8	Hoshiarpur	...	...	...	...	103	97	226	209	...	1	...	...
9	Jullundur	...	...	...	...	142	161	147	165	...	...	...	...
10	Ludhiana	...	...	1	...	294	294	341	301	1	...	...	...
11	Ferozepore	...	2	...	...	416	233	264	396	1	2	...	...
12	Lahore	...	39	31	...	394	538	244	138	42	32	...	...
13	Amritsar	...	10	8	...	283	347	301	297	6	2	...	...
14	Gurdaspur	...	63	18	1	...	207	184	228	187	23	16	...
15	Sialkot	...	89	85	16	18	1,096	1,392	497	669	96	76	18
16	Gujranwala	...	50	43	9	4	356	501	185	147	68	30	7
17	Sheikhupura	...	27	20	10	3	353	266	130	147	23	23	16
18	Gujrat	...	...	1	2	...	488	635	61	62	2	...	...
19	Shahpur	...	7	7	25	20	299	543	41	51	2	1	20
20	Jhelum	...	...	...	...	392	580	32	37	...	1	...	...
21	Rawalpindi	...	1	3	4	452	561	47	45	2	1	2	...
22	Attock	...	...	...	...	243	214	17	18	...	...	...	...
23	Mianwali	...	...	...	...	126	113	18	12	...	...	...	...
24	Montgomery	...	9	8	1	1	251	248	68	81	7	6	3
25	Lyallpur	...	28	64	5	6	380	475	111	132	16	27	2
26	Jhang	...	...	...	...	293	256	44	49	...	...	...	...
27	Multan	...	...	3	...	341	303	9	29	2	1	...	...
28	Muzaffargarh	...	...	...	...	363	223	18	30	...	...	...	...
29	Dera Ghazi Khan	...	...	1	1	213	140	19	11	...	...	...	...
	Total	...	332	297	70	57	8,323	8,954	5,506	5,612	293	222	68
	Population according to census of 1921.	28,011	24,222	158	128	770,738	584,428	591,587	438,614	22,692	16,848	177	1
	Ratio per 1,000 living for the Province.	11·85	12·26	443·04	445·31	10·80	15·32	9·31	12·79	12·91	13·18	384·18	455·

IV—CONTINUED.

PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923—CONTINUED.

8												9											
FIFTEEN YEARS AND UNDER TWENTY YEARS.												TWENTY YEARS AND UNDER THIRTY YEARS.											
Muhammadans.	Hindus.			Indian Christians.			Other classes.			Muhammadans.	Hindus.			Indian Christians.			Other classes.						
Male.	Females.	Males.	Females.	Male.	Females.	Male.	Females.	Male.	Females.	Male.	Females.	Males.	Females.	Male.	Females.	Male.	Females.	Male.	Females.	Male.	Females.	Number.	
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	1	1	1	1	1	1	1	
101	171	275	289	...	...	...	...	211	198	446	571	...	...	...	...	...	...	...	...	...	...	1
251	101	286	399	1	...	...	...	207	146	419	391	1	1	...	...	...	...	...	...	...	...	2
150	147	285	304	...	...	...	...	152	202	568	551	1	...	...	...	...	...	...	...	...	...	3
149	118	431	361	...	...	...	...	466	442	1,402	1,460	1	1	1	1	1	1	1	1	1	1	4
111	89	129	126	...	...	...	...	235	169	438	471	...	1	1	1	1	1	1	1	1	1	5
3	2	7	4	1	...	...	...	6	7	10	12	1	1	1	1	1	1	1	1	1	1	6
33	21	711	745	...	...	...	...	40	30	738	792	...	...	...	...	...	...	...	...	...	...	7
54	79	168	287	1	1	...	...	166	196	390	608	...	...	...	...	...	...	...	...	...	...	8
100	102	127	150	...	...	...	...	281	243	278	342	...	...	...	...	...	...	...	...	...	...	9
245	240	399	387	..	...	...	...	384	256	358	399	1	...	...	...	...	...	...	...	...	...	10
231	222	209	268	...	1	...	..	440	304	312	473	1	...	...	...	...	...	...	...	...	...	11
348	499	169	119	29	22	...	...	864	853	454	422	38	33	...	...	...	...	...	...	...	...	12
286	219	169	275	3	8	...	..	310	397	319	327	10	4	...	...	...	...	...	...	...	...	13
152	201	148	154	11	12	...	...	276	321	290	292	25	16	2	...	...	...	...	...	...	...	14
1,044	1,118	381	633	88	89	15	14	1,120	1,205	682	939	77	69	16	17	15	15	15	15	15	15		
197	250	115	153	80	50	6	8	420	546	199	200	56	38	6	3	16	16	16	16	16	16		
336	322	169	136	28	24	9	9	370	330	171	184	30	29	14	13	17	17	17	17	17	17		
288	356	37	38	..	3	1	...	657	738	77	115	1	3	...	2	18	18	18	18	18	18		
186	212	37	42	1	...	15	12	452	499	78	80	9	7	22	16	19	19	19	19	19	19		
253	265	16	22	...	...	...	...	551	670	45	68	...	2	...	...	20	20	20	20	20	20	
412	401	54	81	1	3	1	5	686	750	106	111	2	3	3	3	21	21	21	21	21	21		
170	205	13	22	...	...	..	...	473	542	37	35	...	...	...	...	22	22	22	22	22	22	
99	89	11	8	...	...	...	...	242	258	21	44	...	...	...	...	23	23	23	23	23	23	
151	149	112	110	9	8	1	...	272	291	74	106	4	9	1	2	24	24	24	24	24	24		
227	243	58	83	16	24	5	2	451	538	79	78	23	21	1	4	25	25	25	25	25	25		
194	211	37	38	...	...	...	...	278	229	55	46	...	...	...	...	26	26	26	26	26	26	
248	248	12	18	...	2	...	1	577	698	23	15	...	1	4	...	27	27	27	27	27	27		
373	261	22	26	...	...	...	...	1,197	1,159	66	117	...	...	...	...	28	28	28	28	28	28	
173	125	28	20	...	...	4	1	563	609	45	74	...	...	6	3	29	29	29	29	29	29	
6,565	6,661	4,610	5,248	269	247	57	52	12,247	12,821	8,130	9,323	281	239	76	62								
6,702	405,557	436,767	317,417	16,312	11,736	182	133	943,910	833,320	812,778	645,951	33,066	23,019	374	357								
12.96	16.42	10.55	16.53	16.49	21.05	313.19	390.98	12.97	15.39	10.00	14.43	8.50	10.38	203.21	173.67								

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED

Number.	Districts.	Muhammadans.	10						FORTY YEARS AND UP					
			THIRTY YEARS AND UNDER FORTY YEARS.											
			Hindus.	Indian Christians.	Other classes.	Muhammadans.	Hindus.							
1	2	3	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.			
1	2	3	85	86	87	88	89	90	91	92	93	94	95	
1	Hissar	...	145	201	455	524	...	...	...	...	171	112	525
2	Rohtak	..	96	89	545	477	1	...	...	...	103	120	573
3	Gurgaon	...	235	245	425	484	...	...	...	...	167	304	499
4	Karnal	...	152	70	611	613	...	...	...	...	500	404	1,495
5	Ambala	...	261	217	426	421	1	...	...	...	259	181	512
6	Simla	...	15	19	46	36	3	4	...	...	22	18	95
7	Kangra	...	33	31	807	813	...	1	...	...	42	27	801
8	Hoshiarpur	...	202	201	384	511	...	1	...	...	183	154	464
9	Jallundur	...	241	191	213	266	...	..	...	...	210	162	243
10	Ludhiana	...	205	364	476	381	...	3	...	...	323	466	441
11	Ferozepore	...	416	325	327	495	...	1	...	...	533	343	441
12	Lahore	...	507	445	364	335	37	32	...	...	584	494	355
13	Amritsar	...	298	393	307	243	2	6	..	...	298	297	307
14	Gurdaspur	...	275	321	297	253	31	15	1	1	322	274	260	
15	Sialkot	...	1,195	1,245	430	597	79	64	14	15	1,016	1,209	514	
16	Gujranwala	...	395	458	128	111	48	28	8	2	372	331	197	
17	Sheikhpura	...	351	364	155	132	37	29	11	24	355	334	167	
18	Gujrat	...	627	698	76	100	2	...	1	...	661	629	94	
19	Shahpur	...	424	488	49	64	4	4	26	26	386	370	54	
20	Jhelum	...	661	768	56	59	...	...	...	...	588	578	56
21	Rawalpindi	...	814	855	93	81	1	3	5	5	676	652	98	
22	Attock	...	621	545	36	38	...	...	...	...	478	466	35
23	Mianwali	...	253	260	26	29	...	...	...	...	233	235	23
24	Montgomery	...	206	321	188	141	3	5	...	1	261	272	125	
25	Lyallpur	...	385	442	86	62	17	26	5	5	379	326	103	
26	Jhang	...	298	243	63	76	..	...	...	...	368	258	110
27	Multan	...	531	469	129	253	6	7	2	2	524	431	127	
28	Muzaffargarh	...	1,485	1,331	79	107	...	...	...	...	1,319	1,079	81
29	Dera Ghazi Khan	...	826	757	41	75	..	...	3	3	707	535	47
		Total	...	12,156	12,456	7,318	7,782	272	229	76	84	12,052	11,061	8,842
Population according to census of 1921.			794,114	666,352	643,616	511,228	22,481	17,177	361	265	568,025	486,332	474,779	3
Ratio for 1,000 living for the province.			15.31	18.69	11.37	15.22	12.10	13.33	210.53	316.93	21.2	22.74	18.62	

N. IV—CONTINUED.

PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923—CONTINUED.

				12								13			
				FIFTY YEARS AND UNDER SIXTY YEARS.								SIXTY YEARS AND UPWARDS.			
FIFTY YEARS.				Muhammadans.		Hindus.		Indian Christians.		Other classes.		Muhammadans.		Hindus.	
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
..	..	..	..	298	211	468	446	..	..	..	..	708	669	1,225	1,257
3	1	..	..	201	87	607	764	1	2	..	..	297	211	1,249	1,319
1	1	..	..	125	184	573	396	..	..	..	..	230	223	857	787
1	1	1	..	108	73	590	552	..	..	..	..	632	574	1,342	1,203
..	..	..	..	319	229	487	360	1	..	..	..	629	493	1,348	1,055
6	7	..	..	23	17	91	65	8	7	..	..	7	3	43	10
..	..	..	..	36	37	1,012	907	..	..	..	..	62	55	1,383	1,202
..	1	..	..	244	166	526	337	1	..	..	..	734	581	1,857	1,371
..	..	..	..	307	198	334	270	..	..	..	..	1,143	1,054	1,334	930
..	1	..	..	327	472	518	383	..	..	..	..	328	438	716	603
3	2	..	..	594	473	598	631	2	3	..	..	1,338	1,214	1,298	1,162
32	24	..	..	331	269	388	245	31	25	..	..	1,448	1,206	931	820
8	5	..	..	327	316	336	265	4	3	..	..	1,060	1,041	1,345	1,249
32	11	..	1	341	245	319	237	34	16	..	..	1,013	862	973	783
74	75	16	16	1,005	1,029	533	519	86	75	20	20	1,749	1,790	776	444
41	69	6	1	414	341	113	102	59	28	7	2	1,433	1,067	265	226
31	25	17	16	392	368	183	130	31	25	17	18	575	536	203	198
..	1	1	2	649	528	75	67	1	1	..	..	1,875	1,468	266	181
4	7	15	15	437	353	66	40	3	2	15	9	1,118	749	156	115
..	..	..	..	528	488	51	47	..	..	..	..	1,330	1,053	159	150
2	..	1	..	636	488	74	56	1	1	2	2	1,208	963	178	138
..	..	2	..	505	411	55	23	..	..	..	..	1,070	859	66	63
..	..	..	..	253	233	24	11	..	..	..	..	588	480	67	69
4	2	..	..	298	282	128	27	53	41	1	10	860	617	366	318
9	8	4	3	367	239	104	87	13	11	5	4	861	695	489	393
..	..	..	..	472	376	133	132	..	..	..	..	852	679	122	143
10	10	2	4	501	289	116	193	5	7	1	1	1,476	1,226	168	155
..	..	..	..	1,164	833	91	34	..	..	..	..	2,038	1,425	164	123
..	..	5	2	681	462	59	36	..	..	4	4	995	696	88	67
261	251	70	60	11,883	9,697	8,652	7,359	334	247	72	70	27,707	22,930	19,434	16,540
15,069	12,104	264	261	397,365	320,366	339,811	261,590	9,704	7,704	160	156	437,197	321,889	334,927	253,383
17.32	20.74	265.15	229.89	29.90	30.27	25.46	28.13	34.42	32.06	450.00	448.72	63.37	71.24	58.02	65.28

DEATHS REGISTERED BY SEXES AND CLASSES ACCORDING TO SPECIFIED A

1	2	13				14						
		SIXTY YEARS AND UPWARDS— CONCLUDED.				TOTAL.						
Number.	Districts.	<i>Indian Christians.</i>		<i>Other classes.</i>		<i>Muhammadans.</i>		<i>Hindus</i>		<i>Indian Christians.</i>		
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
1	2	113	114	115	116	117	118	119	120	121	122	
1	Hissar	...	...	...	...	4,700	4,491	9,170	9,048	...	...
2	Rohtak	...	3	2	...	2,517	1,573	10,148	10,014	31	31	
3	Gurgaon	...	...	...	...	2,685	3,034	7,340	6,520	2	2
4	Karnal	...	1	1	...	4,841	4,348	12,324	11,665	4	4	
5	Ambala	...	...	1	...	3,515	3,062	7,633	7,103	3	3
6	Simla	...	3	2	...	85	72	310	208	25	25	
7	Kangra	...	...	1	...	618	506	10,397	9,802	1	1
8	Hoshiarpur	...	4	1	..	4,208	3,842	9,420	8,457	19	19	
9	Jullundur	...	...	...	...	6,228	5,627	7,040	6,628	...	...
10	Ludhiana	...	1	1	...	3,961	4,416	6,437	5,499	6	6	
11	Ferozepore	...	3	4	...	9,871	8,023	8,686	9,056	23	23	
12	Lahore	...	50	38	...	11,823	11,360	5,234	4,118	481	481	
13	Amritsar	...	9	7	...	7,895	7,676	7,867	6,828	75	75	
14	Gurdaspur	...	113	49	4	1	6,351	6,355	6,245	5,515	769	769
15	Sialkot	...	99	88	28	20	14,768	15,955	6,622	7,268	1,603	1,603
16	Gujrauwala	...	30	32	14	4	8,539	8,545	2,287	1,976	623	623
17	Sheikhupura	...	44	43	27	23	5,352	4,862	1,990	1,791	401	401
18	Gujrat	...	3	2	4	3	9,808	9,032	1,242	1,110	15	15
19	Shahpur	...	11	12	41	33	6,937	1,115	1,043	874	106	106
20	Jhelum	...	...	...	...	7,073	7,087	654	644	1	1
21	Rawalpindi	...	2	2	4	3	7,778	7,453	1,097	1,011	25	25
22	Attock	1	6,363	5,680	453	380
23	Mianwali	3,977	3,587	426	434
24	Montgomery	...	4	3	...	1	6,264	5,735	2,770	2,643	178	178
25	Lyallpur	...	186	140	16	13	7,644	7,078	4,007	3,867	510	510
26	Jhang	...	1	6,308	5,501	1,196	1,300	2	2
27	Multan	...	8	7	3	2	9,571	8,328	1,773	1,944	62	62
28	Muzaffargarh	11,113	8,869	958	835	1	1
29	Dera Ghazi Khan	4	4	6,833	5,451	692	665
Total		575	486	145	109	187,426	173,663	135,461	127,263	4,916	4,916	
Population according to census of 1921.		11,263	7,482	147	146	...	...	...	...	...	...
Ratio per 1,000 living for the Province.		51·03	58·27	98·39	746·58	...	...	...	...	...	...

IV—CONCLUDED.

PERIODS IN THE DISTRICTS OF THE PUNJAB DURING THE YEAR 1923—CONCLUDED.

15

RATIO OF DEATHS PER 1,000 OF POPULATION.

<i>Other classes.</i>		<i>Muhammadans.</i>		<i>Hindus.</i>		<i>Indian Christians.</i>		<i>Other classes.</i>		<i>Total.</i>		Number.
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	1
123	124	125	126	127	128	129	130	131	132	133	134	
...	...	41.33	43.58	28.47	32.58	...	...	...	...	31.84	35.51	1
...	...	38.43	26.42	29.27	34.47	5.98	5.00	...	...	30.43	32.72	2
...	...	23.16	30.06	29.22	30.66	3.28	8.55	...	...	27.26	30.41	3
2	...	38.14	44.00	37.93	44.05	2.24	3.18	142.86	...	37.85	42.70	4
...	...	33.12	35.21	30.26	36.94	1.83	1.40	...	...	30.89	36.12	5
...	...	18.43	57.88	14.46	20.38	51.33	79.03	...	...	15.21	22.94	6
...	3	29.39	29.40	28.07	27.79	7.04	21.13	...	1.97	28.02	27.75	7
...	...	27.18	28.64	27.59	28.87	9.59	6.04	...	..	27.37	28.70	8
...	...	31.61	33.91	28.07	33.81	...	...	...	...	29.48	33.72	9
...	...	37.10	51.23	30.48	33.98	7.03	10.97	...	...	32.63	39.89	10
...	...	30.05	37.14	25.84	34.46	11.31	13.11	...	...	31.13	35.58	11
...	...	33.11	39.85	20.64	23.54	19.19	19.38	...	...	27.47	33.00	12
...	...	33.06	40.26	28.22	32.27	11.88	12.07	...	...	30.16	35.70	13
18	11	27.44	33.31	28.62	31.57	42.94	23.51	257.14	84.62	28.60	32.15	14
203	188	51.13	64.77	43.16	57.80	55.91	62.92	154.96	?	49.12	62.90	15
104	65	34.68	48.40	26.21	30.00	41.15	45.39	?	?	33.13	40.50	16
205	205	23.87	26.85	18.07	21.71	24.07	26.35	806.20	?	22.64	26.01	17
10	9	25.95	27.22	20.93	21.09	12.08	15.30	285.71	180.00	25.25	26.37	18
323	277	21.43	22.45	16.80	17.32	17.07	17.68	?	?	31.45	22.43	19
...	...	33.23	33.84	23.86	25.23	5.03	40.00	...	...	32.14	32.90	20
30	34	32.26	34.55	24.09	32.58	15.05	25.86	7.46	50.75	30.55	34.31	21
4	4	26.63	25.30	19.92	17.75	...	...	21.16	14.81	26.03	24.65	22
...	...	14.46	24.52	15.69	19.90	...	...	...	...	23.17	23.91	23
31	19	22.28	24.72	26.00	31.54	31.03	24.34	720.90	678.57	23.50	26.56	24
55	52	24.75	27.86	20.99	27.52	22.34	30.27	?	?	23.37	27.97	25
...	...	24.58	25.15	24.59	28.21	8.03	...	...	...	24.57	25.66	26
19	18	24.13	25.07	21.01	29.80	26.48	28.51	16.09	95.59	23.50	25.88	27
...	...	41.41	39.42	23.90	23.99	13.89	14.71	...	...	39.12	37.35	28
35	27	30.13	20.52	22.63	24.64	..	...	?	?	29.37	29.02	29
1,042	967	30.49	33.28	27.79	32.20	29.74	30.68	62.04*	134.63*	29.35	32.86	
...	
...	

* Figures incorrect due to misclassification.

NOTE.—The population of military cantonments by different ages cannot be excluded as it is not shown separately in the census returns.

ANNUAL FORM No. V.

CANCELLED AND INCORPORATED IN ANNUAL FORM No. IV.

ANNUAL FORM No. VI.

**DEATHS REGISTERED FROM DIFFERENT CAUSES AND BIRTHS
REGISTERED IN THE DISTRICTS (RURAL CIRCLES)
OF THE PUNJAB DURING THE YEAR 1923.**

DEATHS REGISTERED FROM DIFFERENT CAUSES AND BIRTHS REGISTERED IN THE

1	2	3	4				5	6	7	8	9	10			
Number.		Population according to census of 1921.	BIRTHS.				Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	INJU		
			Male.	Female.	Total.	Birth rate per 1,000 of population.							Suicide.		
A—RURAL CIRCLES.															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
AMBALA DIVISION.															
1	Hissar	... 728,146	16,704	14,637	31,341	43·04	...	47	3	19,660	205	339	11	9	
2	Rohtak	... 696,915	17,058	15,841	32,899	47·21	...	16	2,289	14,525	96	616	3	9	
3	Gurgaon	... 631,068	16,665	14,980	31,645	50·15	...	56	1,010	10,933	189	735	17	30	
4	Karnal	... 747,506	16,386	14,717	31,103	41·41	...	1	312	24,947	61	400	3	3	
5	Ambala	... 582,974	12,769	11,279	24,048	41·25		9	...	9,381	237	6,555	...	...
6	Simla	... 14,788	218	184	402	27·18	..	..	...	218	5	14	...	...
JULLUNDUR DIVISION.															
7	Kangra	... 757,572	14,976	13,990	28,966	38·24	...	81	...	14,490	1,440	2,097	9	4	
8	Hoshiarpur	... 865,376	21,142	19,225	40,367	46·65	...	240	5	18,201	5	1,861	6	4	
9	Jullundur	... 713,917	17,439	15,619	33,058	46·31	...	81	4	17,159	83	1,183	6	1	
10	Ludhiana	... 484,267	11,472	10,770	22,242	45·93	...	83	2	10,866	185	978	8	8	
11	Ferozepore	... 983,423	19,484	17,046	36,530	37·03	...	101	...	25,043	384	1,080	12	1	
LAHORE DIVISION.															
12	Lahore	... 783,169	15,880	14,091	29,971	38·27	...	101	187	16,084	204	904	2	2	
13	Amritsar	... 752,251	19,507	17,822	37,329	49·62	...	55	12	17,238	450	2,032	1	2	
14	Gurdaspur	... 795,596	18,912	17,236	36,148	45·44	...	49	24	13,981	2,130	1,134	...	1	
15	Sialkot	... 755,553	17,116	15,681	32,797	43·41	...	146	20,724	15,384	507	1,363	4	6	
16	Gujranwala	... 531,961	13,594	12,250	25,844	48·58	...	41	3,591	13,009	122	325	1	...	
17	Sheikhupura	... 596,008	12,709	11,248	23,957	40·20	...	84	595	11,28	91	303	...	1	
RAWALPINDI DIVISION.															
18	Gujrat	... 778,026	17,155	15,423	32,578	41·87	...	10	4,069	11,427	159	1,657	5	1	
19	Shahpur	... 658,017	14,105	12,345	26,450	40·19	2	5	1,980	8,667	64	80	1	3	
20	Jhelum	... 443,802	9,815	8,557	18,372	41·40	...	2	4,702	6,713	66	908	3	5	
21	Rawalpindi	... 483,045	10,538	9,495	20,033	41·47	1	9	2,219	8,316	1,574	1,282	2	...	
22	Attock	... 486,533	10,971	9,101	20,072	41·26	...	8	1,059	9,229	6	573	2	2	
23	Mianwali	... 328,270	8,221	7,187	15,408	46·94	...	3	...	6,293	27	194	1	...	
MULTAN DIVISION.															
24	Montgomery	... 678,076	16,646	14,257	30,903	45·57	...	105	379	14,159	46	153	4	5	
25	Lyalipur	... 898,609	23,416	21,40	44,824	49·88	...	113	2,633	14,849	92	772	5	3	
26	Jhang	... 518,862	13,038	11,356	24,444	47·11	...	21	13	8,502	112	1,059	...	1	
27	Multan	... 779,519	18,354	15,35	33,729	43·28	...	60	20	15,506	48	249	4	...	
28	Muzaffargarh	... 539,192	9,841	8,147	17,988	33·36	...	4	..	19,847	9	85	1	...	
29	Dera Ghazi Khan	... 428,031	8,327	6,697	15,024	35·10	...	2	...	11,792	55	190	7	5	
Total of Rural Circles.			18,443,502	422,508	375,964	798,472	43·29	3	1,438	45,832	386,807	8,616	29,121	118	106

No. VI.

DISTRICTS (RURAL CIRCLES) OF THE PUNJAB DURING THE YEAR 1923.

11				12	13	14										15	
						RATIO OF DEATHS PER 1,000 OF POPULATION.										FROM ALL CAUSES.	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
	Wounds and accidents.	Snake-bite and killed by wild beasts.	Rabies.	Total.	All other causes.	Total deaths from all causes.										Mean Ratio of previous five years.	Number.
178	35	2	235	3,231	23,720	0·06	0·004	27·00	0·28	0·47	0·32	4·44	32·58	40·61	1		
166	18	..	196	3,860	21,598	..	0·02	3·28	20·84	0·14	0·88	0·28	5·54	30·99	46·58	2	
174	14	1	236	5,870	18,129	..	0·09	1·60	15·90	0·30	1·16	0·37	9·30	28·73	60·55	3	
145	32	3	186	3,989	29,896	..	0·001	0·42	33·37	0·08	0·54	0·25	5·34	39·99	49·51	4	
..	...	..	..	3,252	19,434	..	0·02	..	16·09	0·41	11·24	..	5·58	33·34	44·51	5
..	...	..	..	50	287	..	..	..	14·74	0·34	0·95	..	3·38	19·41	40·26	6
363	31	6	413	2,727	21,193	..	0·04	..	19·13	1·90	2·77	0·55	3·60	27·98	41·66	7	
177	15	6	208	3,724	24,244	..	0·28	0·01	21·03	0·01	2·15	0·24	4·30	28·02	38·85	8	
200	1	4	212	3,767	22,439	..	0·04	0·01	24·04	0·12	1·66	0·30	5·28	31·43	33·45	9	
76	4	6	102	4,487	16,703	..	0·17	0·004	22·44	0·38	2·02	0·21	9·27	34·49	40·27	10	
223	21	3	260	6,486	33,318	..	0·10	..	25·39	0·35	1·09	0·26	6·58	33·78	34·31	11	
150	30	6	130	4,191	21,861	..	0·13	0·24	20·54	0·26	1·15	0·24	5·35	27·91	35·80	12	
173	13	2	191	4,144	24,122	..	0·07	0·02	22·92	0·60	2·70	0·25	5·51	32·07	35·90	13	
141	2	2	146	6,521	23,985	..	0·06	0·03	17·57	2·68	1·43	0·18	8·0	30·15	38·27	14	
216	14	7	247	4,413	42,784	..	0·19	27·43	20·36	0·67	1·80	0·33	5·84	56·63	33·45	15	
159	58	3	221	2,159	19,468	..	0·08	6·75	24·45	0·23	0·61	0·42	4·06	36·60	36·09	16	
29	76	1	107	2,395	14,863	..	0·14	1·00	18·94	0·15	0·51	0·18	4·02	24·94	27·52	17	
166	18	3	193	2,191	19,706	..	0·01	5·23	14·69	0·20	2·13	0·25	2·82	25·33	32·97	18	
216	29	4	253	3,164	14,215	0·003	0·01	3·61	13·17	0·10	0·12	0·38	4·81	21·60	29·67	19	
158	30	1	197	1,907	14,495	..	0·004	10·59	15·13	0·15	2·05	0·44	4·30	32·66	37·80	20	
181	29	..	212	1,352	14,965	0·002	0·02	4·59	17·22	3·26	2·65	0·44	2·80	30·98	36·11	21	
152	13	1	170	1,380	12,425	..	0·02	2·18	18·97	0·01	1·18	0·35	2·84	25·54	34·44	22	
88	10	1	100	1,182	7,799	..	0·01	..	19·17	0·08	0·59	0·30	3·60	23·76	35·68	23	
165	51	1	226	2,114	17,182	..	0·15	0·56	20·88	0·07	0·23	0·33	3·12	25·34	27·69	24	
259	6	9	282	4,603	23,349	..	0·13	2·93	16·52	0·10	0·86	0·31	5·12	25·98	29·94	25	
143	28	2	174	2,748	12,629	..	0·04	0·03	16·39	0·22	2·04	0·34	5·30	24·34	36·98	26	
235	69	..	308	2,823	19,014	..	0·08	0·03	19·89	0·06	0·32	0·40	3·62	24·39	30·66	27	
148	67	1	217	321	20,988	..	0·01	..	36·81	0·02	0·16	0·40	1·52	38·92	34·09	28	
95	34	1	142	452	12,633	..	0·004	..	27·55	0·13	0·44	0·33	1·06	29·51	34·88	29	
4,576	748	76	5,624	90,003	567·444	0·0001	0·08	2·48	20·97	0·47	1·58	0·30	4·88	30·77	36·55		

DEATHS FROM DIFFERENT CAUSES AND BIRTHS REGISTERED IN THE TOWNS

1 Number.	2 B.—TOWNS.	3 Population according to Census of 1921.	BIRTHS.				5	6	7	8	9	10	I Suicide	
1	2	3	4 Males.	5 Females.	6 Total.	7 Birth rate per 1,000 of population.	8 Cholera.	9 Small-pox.	10 Plague.	11 Fever.	12 Dysentery and Diarrhoea.	13 Respiratory diseases.	14 Males	15 Females.
B.—TOWNS.														
1	Hissar	21,415	420	387	807	37.68	...	5	...	480	29	70	...	...
2	Hansi	15,425	356	354	710	46.03	...	...	4	229	19	61	...	1
3	Khiwani	33,270	772	721	1,493	44.88	...	110	5	483	71	114	...	...
4	Sirsa	16,241	296	233	529	32.57	...	3	...	685	29	58	...	...
5	Fatehabad	2,313	47	45	92	39.78	...	...	...	128	2	6	...	...
ROHTAK DISTRICT.														
6	Robtak	25,240	579	501	1,080	42.79	...	...	99	353	22	65	...	...
7	Jhajjar	10,800	261	255	516	47.78	...	...	20	110	16	37	...	...
8	Beri	7,454	185	169	354	47.49	...	...	116	52	31	18	...	1
9	Gohana	5,107	115	80	195	38.18	...	...	8	19	9	21	...	...
10	Bahadurgarh	5,955	152	154	306	51.39	...	1	9	116	10	17	...	...
11	Sonepat	12,981	354	298	652	50.23	...	1	4	197	20	36	...	...
12	Mehm	7,820	189	141	330	42.20	...	...	39	67	7	52	...	...
GURGAON DISTRICT.														
13	Rewari	23,129	547	494	1,041	45.01	...	7	4	196	29	78	...	4
14	Palwal	9,352	289	247	536	57.81	...	3	3	101	16	33	...	1
15	Firozpur	4,542	128	116	244	53.72	...	2	...	86	6	8	...	...
16	Hodal	5,854	168	154	322	55.01	...	...	...	71	3	5	...	...
17	Ballabgarh	3,721	112	103	215	57.78	...	...	...	69	7	11	...	...
18	Faridabad	4,337	90	67	157	36.20	...	14	...	118	4	7	...	...
KARNAL DISTRICT.														
19	Karnal	22,845	473	418	891	39.00	...	...	...	668	30	85	...	...
20	Kaithal	15,477	393	376	769	49.69	...	...	...	667	8	26	...	...
21	Panipat	27,343	800	694	1,494	54.64	...	...	9	467	18	166	...	...
22	Shahabad	11,329	242	243	485	42.80	...	...	...	171	5	95	...	...
23	Thanesar	4,226	57	64	121	28.63	...	...	...	98	2	14	...	...
AMBALA DISTRICT.														
24	Ambala	28,581	536	447	983	34.39	...	2	...	438	62	124	...	...
25	Jagadhri	11,544	272	202	474	41.06	...	1	...	283	22	48	...	...
26	Burya	3,574	60	72	132	36.93	...	...	...	58	5	8	...	...
27	Sadhaura	7,630	162	184	346	45.35	...	...	...	72	31	92	...	...
28	Rupar	7,606	195	183	378	49.70	...	1	...	68	18	38	...	...
SIMLA DISTRICT.														
29	Simla	26,149	307	296	603	23.06	...	...	...	259	45	46	...	...
KANGRA DISTRICT.														
30	Kangra	3,581	52	44	96	26.81	...	...	...	44	5	5	...	...
31	Dharamsala	3,065	55	30	85	27.73	...	...	...	35	6	4	...	1
32	Palampur	529	2	3	5	9.45	...	...	...	2	...	...	...	...
HOSHIARPUR DISTRICT.														
33	Hoshiarpur	21,285	443	421	864	40.59	...	35	...	170	1	137	...	...
34	Khanpur	2,701	68	64	132	48.87	...	1	...	53	...	15	...	...
35	Hariana	5,205	94	81	175	33.62	...	15	...	75	...	9	...	...
36	Garhdiwala	5,196	78	55	133	25.60	...	...	...	49	...	10	...	...
37	Dasuya	3,889	176	141	317	81.51	...	2	...	146	...	32	...	...
38	Tanda Urmor	8,362	212	195	407	48.67	...	7	...	181	...	60	...	...
39	Miani	4,934	125	93	218	44.18	...	...	...	123	1	8	...	...
40	Mukerian	2,346	57	55	112	47.74	...	...	...	60	...	8	...	...
41	Una	4,603	84	79	163	35.41	1	15	...	60	...	8	...	...
42	Anandpur	3,522	57	66	123	34.92	...	1	...	52	...	12	...	9
JULLUNDUR DISTRICT.														
43	Jullundur	59,085	1,524	1,381	2,905	49.17	2	18	...	719	183	407	2	...
44	Kartarpur	8,512	220	182	402	47.23	...	1	...	119	13	53	...	...
45	Bungah	5,049	95	90	186	36.55	...	2	...	44	6	11	...	...
46	Rahon	5,947	125	138	263	44.22	...	1	...	134	5	23	...	...
47	Phialaur	4,696	92	97	189	40.25	...	2	...	78	18	42	...	...
48	Nurmahal	6,845	173	166	339	49.53	...	...	...	133	19	57	...	...
49	Nakodar	9,434	195	152	347	36.78	...	...	...	153	14	24	...	...

o. VI.

F THE PUNJAB DURING THE YEAR 1923.

RIFS.	Ratio of Deaths per 1,000 of Population.												From all causes. Mean ratio of previous five years. Number.			
	12		13		14											
	Total.	All others causes.	Total deaths from all causes.	Cuolera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Injuries.	All others causes.	For the year.				
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
10	201	795	1,273	174	0·23	22·41	1·35	3·27	0·47	9·39	37·12	41·55	1			
2	223	538	909	174	0·23	14·85	1·23	3·95	0·13	14·46	34·88	49·62	2			
18	470	1,29	129	174	3·31	0·15	14·52	2·13	3·43	0·60	14·13	38·26	48·46	3		
5	129	909	909	174	0·18	42·18	1·79	3·57	0·31	7·94	55·97	88·51	4			
2	36	174	174	174	...	55·34	0·86	2·59	0·86	13·56	75·23	31·30	5			
2	186	727	1,273	174	...	3·92	13·99	0·87	2·58	0·08	7·37	28·80	38·11	6		
6	161	530	909	174	...	18·52	10·19	1·48	3·43	0·56	14·91	49·07	49·85	7		
2	102	322	129	174	...	15·56	6·99	4·16	2·41	0·40	13·68	43·70	64·34	8		
1	30	259	222	174	...	1·57	37·01	1·76	4·11	0·39	5·87	50·71	56·86	9		
1	67	222	135	174	0·17	1·51	19·48	1·63	2·85	0·34	11·25	37·28	53·50	10		
5	135	299	250	174	0·08	0·31	15·18	1·54	2·77	0·43	10·40	30·74	42·26	11		
2	85	250	250	174	...	4·99	8·57	0·90	6·63	...	10·87	31·97	Not available.	12		
13	236	587	1,273	174	0·30	0·17	8·47	1·25	3·37	0·74	10·20	24·5	4·63	13		
8	128	293	909	174	0·32	0·32	10·80	1·71	3·53	0·97	13·69	31·33	68·82	14		
2	51	155	155	174	0·44	1·93	1·93	1·32	1·76	0·44	11·23	34·13	67·42	15		
3	87	169	169	174	...	12·13	0·51	0·85	0·51	14·86	28·87	64·91	16			
5	26	118	118	174	...	18·54	1·88	2·96	1·34	6·99	31·71	58·43	17			
2	9	152	152	174	3·23	27·21	0·93	1·62	...	2·08	35·05	59·03	18			
1	287	1,070	1,070	174	...	29·24	1·31	3·72	...	12·56	46·84	50·40	19			
1	175	878	878	174	...	43·10	1·52	1·8	0·13	11·31	56·73	42·81	20			
1	271	872	872	174	0·33	14·88	0·66	6·07	0·04	9·91	31·89	49·56	21			
1	129	330	330	174	...	15·9	0·44	2·21	...	11·39	29·13	35·38	22			
1	29	143	143	174	...	23·19	0·47	3·31	...	6·86	33·84	39·04	23			
1	178	804	804	174	0·07	15·32	2·17	4·34	...	6·93	28·13	30·05	24			
1	133	487	487	174	0·09	24·59	1·91	4·16	...	11·52	42·19	51·94	25			
2	42	113	113	174	...	16·23	1·40	2·24	...	11·75	31·62	58·81	26			
6	69	264	264	174	...	9·44	4·06	12·06	...	9·4	34·60	37·93	27			
9	91	216	216	174	0·13	8·94	2·37	5·00	...	11·96	28·40	33·18	28			
1	89	439	439	174	...	9·90	1·72	1·76	...	3·40	16·79	27·28	29			
3	3	12	69	174	...	12·29	1·40	1·40	0·84	3·35	19·27	36·19	30			
1	13	58	58	174	...	11·42	1·96	1·31	...	4·24	18·92	26·04	31			
1	2	1	5	174	...	3·78	...	...	3·78	1·89	9·45	Not available.	32		
4	5	154	502	174	1·64	7·99	0·05	6·44	0·23	7·23	23·55	27·80	33			
1	18	87	87	174	0·37	19·52	...	5·55	...	6·66	32·21	28·36	34			
1	13	112	112	174	2·88	14·41	...	1·73	...	2·50	21·52	26·40	35			
2	24	85	85	174	...	9·43	...	1·92	0·38	4·62	16·18	17·98	36			
2	26	208	208	174	0·51	37·54	...	8·23	0·51	6·69	53·41	60·32	37			
1	29	278	278	174	0·84	21·65	...	7·18	0·12	3·47	33·25	33·77	38			
1	15	147	147	174	...	24·93	0·20	1·62	...	3·04	23·79	37·37	39			
1	2	34	104	174	...	25·58	...	3·41	0·85	14·49	44·33	48·34	40			
1	26	114	114	174	0·22	13·03	...	2·61	...	5·65	24·77	26·68	41			
1	12	75	75	174	0·28	14·77	...	2·56	0·23	8·41	21·29	28·22	42			
30	1	33	497	1,859	0·03	0·30	12·17	3·10	6·89	0·56	8·41	31·46	22·50	43		
1	2	73	261	174	0·12	13·98	1·53	6·23	0·23	8·58	30·66	38·30	44			
3	3	32	98	174	0·39	8·65	1·18	2·16	0·59	6·29	19·26	28·49	45			
2	2	30	195	174	0·17	22·53	0·84	3·87	0·34	5·01	32·79	41·70	46			
5	5	53	193	174	0·43	16·61	3·93	8·94	...	11·29	41·10	47·78	47			
2	2	22	236	174	...	19·43	2·8	8·33	0·73	3·21	31·48	35·88	48			
2	49	242	242	174	...	16·22	1·48	2·54	0·21	5·19	21·65	35·70	49			

DEATHS FROM DIFFERENT CAUSES AND BIRTHS REGISTERED IN THE TOWNS

Number.	2	3	BIRTHS.						5	6	7	8	9	10
			Males.	Females.	T. tot.	Birth rate per 1,000 of population.	Cholera.	Small-pox.						
B.—TOWNS														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		Population according to Census of 1921.												
1	LUDHIANA DISTRICT.													
50	Ludhiana	... 51,880	1,194	1,121	2,315	44·62	...	10	...	1,386	257	567	1	
51	Jagraon	... 17,731	439	426	865	48·78	...	45	...	254	34	95	...	
52	Raekot	... 8,379	191	181	372	44·40	...	...	...	122	9	22	1
53	Khanna	... 5,365	84	63	147	27·40	...	10	...	63	9	16	...	
54	FEROZEPORE DISTRICT.													
55	Ferozepore	... 29,695	490	384	874	29·43	1	3	...	432	37	94	...	
56	Zira	... 4,622	108	105	213	46·08	...	...	...	97	1	15	...
57	Dharmkot	... 5,960	138	133	271	45·47	...	...	...	79	11	24	...
58	Muktsar	... 10,539	182	157	349	33·12	1	...	...	161	14	29	...
59	Fazilka	... 13,829	265	210	475	34·35	...	...	...	408	38	99	...
60	Moga	... 14,145	156	136	292	20·64	...	1	...	51	4	19	...	
61	Abohar	... 8,916	127	105	232	26·02	...	3	...	102	19	11	...	
	Gidarbaha	... 5,178	26	43	69	13·33	...	8	...	23	;	2	...	
	LAHORE DISTRICT.													
62	Lahore	... 257,295	4,830	4,598	9,428	36·64	1	139	270	4,449	442	1,601	4	
63	Chunian	... 7,642	203	177	380	49·73	...	1	1	308	6	13	...	
64	Khudian	... 3,344	77	64	141	42·17	...	...	...	118	10	16	...
65	Kasur	... 31,118	736	661	1,347	45·04	...	2	4	498	36	114	...	
66	Khem Karn	... 6,152	166	150	36	51·37	...	1	...	158	2	24	...	
67	Patti	... 10,439	244	224	468	44·83	...	...	...	211	11	20	...
68	Baghbanpura-Bhogiwal	... 10,251	293	292	55	57·07	...	...	1	242	5	22	...
69	Ichhra	... 3,584	82	60	142	39·62	...	1	54	45	...	4	...	
70	Pattoki Mandi	... 3,836	95	95	190	49·53	...	...	...	105	...	11	...
	AMBITSAR DISTRICT.													
71	Amritsar	... 157,021	4,186	3,801	7,987	50·86	...	44	4	2,989	101	1,540	2	
72	Majithia	... 5,664	136	140	276	48·73	...	...	...	91	18	20	...
73	Jandiala	... 7,464	163	157	320	42·87	...	4	...	141	3	7	...	
74	Tarn Taran	... 5,988	97	95	192	32·06	1	...	...	45	6	16	...
	GURDASPUR DISTRICT.													
75	Gurdaspur	... 8,906	164	150	314	35·26	...	...	...	352	17	14	...
76	Dina Nagar	... 4,047	107	126	233	57·57	...	...	...	62	5	6	...
77	Pathankot	... 7,353	168	125	293	39·85	...	...	...	76	14	23	...
78	Dalhousie	... 1,457	11	10	21	14·41	...	...	...	8	2	2	...
79	Batala	... 26,122	733	655	1,388	53·14	...	9	2	447	19	75	...	
80	Dera Nauak	... 4,333	77	115	192	44·31	...	...	3	66	2	2	...
	SIALKOT DISTRICT.													
81	Sialkot	... 56,018	1,390	1,373	2,763	49·32	...	2	455	998	117	172	...	
82	Daska	... 6,283	131	91	222	35·33	...	1	262	98	3	4	...	
83	Jamke	... 8,621	81	88	169	46·67	...	...	82	48	4	7	...
84	Pasrur	... 6,909	172	164	336	48·63	...	...	33	160	14	16	...
85	Zaffarwal	... 3,873	81	62	143	36·92	...	...	2	73	7	12	...
86	Narowal	... 5,343	110	108	218	40·80	...	...	49	129	17	8	...
87	Sambrial	... 3,324	70	58	128	38·51	...	...	63	55	2	9	...
88	Sahowala	... 3,410	97	71	168	49·27	...	...	92	84	2	2	...
89	Begowala	... 3,697	71	64	135	36·52	...	...	...	126	1	2	...
90	Bhopalwala	... 3,787	79	53	132	35·04	...	...	204	33	1	4	...
91	Mitranwali	... 3,177	84	73	157	49·42	...	...	156	56	4	2	...
92	Bodomali	... 2,849	59	55	114	40·01	...	2	7	54	1	...	...
93	Kalaswala	... 2,846	72	56	128	44·98	...	...	152	38	1	6	...
94	Daud	... 3,285	62	59	121	36·83	...	...	3	88	...	1	1
95	Chawinda	... 4,979	105	100	205	41·17	...	...	53	49	14	4	...
	GUJRANWALA DISTRICT.								...	...		
96	Gujranwala	... 37,887	849	698	1,547	40·83	1	43	396	650	45	183	...	
97	Wazirabad	... 18,645	423	393	816	43·77	...	...	130	224	21	68	...
98	Eminabad	... 5,816	146	106	252	43·33	...	4	4	97	12	16	...	
99	Kila Didar Singh	... 2,544	66	62	128	50·31	...	...	1	17	3	7	...
100	Akalgarh	... 5,147	106	103	209	40·61	...	3	61	50	5	20	...	
101	Ramnagar	... 4,632	112	102	214	46·20	...	...	...	73	2	9	...
102	Sohdra	... 4,250	102	101	203	47·76	...	1	14	70	1	4	...	
103	Hafizabad	... 8,854	163	101	264	29·82	...	1	1	144	4	9	...	
104	Pindi Bhattian	... 3,845	92	68	160	41·61	...	16	...	51	2	11	...	
	SHEIKHUPURA DISTRICT.													
105	Khangah Dogran	... 5,201	26	34	60	11·54	...	...	...	23	1	1	...
106	Sangla	... 5,961	55	42	97</									

VI—CONTINUED.

THE PUNJAB DURING THE YEAR 1923.

DEATHS FROM DIFFERENT CAUSES AND BIRTHS REGISTERED IN THE TOWNS

1 Number.	2	2	Population according to Census of 1921.	4	5	6	7	8	9	10	11	12	13	14	15
	B.—TOWNS.														
	BIRTHS.														
1	2	3	4	Males.	Females.	Total.	Birth rate per 1,000 of population.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Males.	1
	B.—TOWNS.														
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	B.—TOWNS.														
	B.—TOWNS.														

O. VI—CONCLUDED.

F THE PUNJAB DURING THE YEAR 1923.

RIES.																					
16		17		18		19		20		21		22		23		24		25		26	

APPENDIX TO ANNUAL FORM No. VI.B.

BIRTHS AND DEATHS REGISTERED IN THE CANTONMENTS OF THE PUNJAB DURING THE YEAR 1923.

ANNUAL FORM No. VII.

DEATHS REGISTERED FROM CHOLERA IN THE DISTRICTS OF THE PUNJAB
DURING EACH MONTH OF THE YEAR 1923.

DEATHS REGISTERED FROM CHOLERA IN THE DISTRICTS

No. VII.

OF THE PUNJAB DURING EACH OF THE YEAR 1923.

THS.													6		7		8		9	
	TOTAL.						RATIO OF DHATHS PER 1,000 OF POPULATION.						Mean ratio per 1,000 for previous five years.		Number.					
	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Mean ratio per 1,000 for previous five years.	Number.			
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·45	1			
...	0·19	2			
...	0·49	3			
...	0·36	4			
...	0·23	5			
...	0·04	6			
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1·51	7			
...	0·13	8			
...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·10	9			
...	0·08	10			
...	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·12	11			
...	0·36	12			
...	0·15	13			
...	0·06	14			
...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·05	15			
...	0·21	16			
...	0·23	17			
...	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·12	18			
...	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0·14	19			
...	0·11	20			
1	0·57	21			
...	1·16	22			
...	0·97	23			
...	0·01	24			
...	0·33	25			
...	0·09	26			
...	0·01	27			
...	0·03	28			
...	0·03	29			
2	2	5	...	...	...	...	8	3	11	0·001	0·0003	0·01	0·23				

DEATHS REGISTERED FROM SMALL-POX IN THE DISTRICTS

1 Number.	2 DISTRICTS.	3 CIRCLES OF REGISTRATION.		4 VILLAGES.		MON								
		Number 13 each district.	Number from which deaths from small- pox were reported.	Number in each district.	Number from which deaths from small- pox were reported.	January.	February.	March.	April.	May.	June.	July.		
1	2	3	4	5	6	7	8	9	10	11	12	13		
AMBALA DIVISION.														
1	Hissar	...	...	27	12	960	14	8	4	6	6	9	13	5
2	Rohtak	...	...	20	9	722	4	1	...	2	5	2	2	...
3	Gurgaon	...	...	24	13	1,351	24	8	16	5	16	13	14	1
4	Karnal	...	...	25	1	1,390	1	...	...	...	...	...	...	...
5	Ambala	...	...	19	5	1,715	3	...	...	1	2	1	4	5
6	Simla	...	...	3	...	208	...	...	...	...	...	...	...	...
JULLUNDUR DIVISION.														
7	Kangra	...	...	17	9	711	20	7	2	5	2	...	4	2
8	Hoshiarpur	...	...	23	20	2,111	113	11	9	7	14	43	42	41
9	Jullundur	...	...	17	12	1,222	20	4	1	2	6	2	6	2
10	Ludhiana	...	...	14	3	858	68	1	1	4	9	21	36	27
11	Ferozepore	...	...	27	20	1,493	26	5	4	10	11	13	18	27
LAHORE DIVISION.														
12	Lahore	...	...	30	23	1,121	18	78	23	14	18	19	14	10
13	Amritsar	...	...	15	10	1,037	15	8	...	...	3	...	1	...
14	Gurdaspur	...	...	22	16	2,246	28	5	6	1	1	7	11	4
15	Sialkot	...	...	28	15	2,053	46	11	15	7	16	10	13	19
16	Gujranwala	...	...	20	14	1,212	12	33	15	6	8	13	7	8
17	Sheikhupura	...	...	20	16	1,214	61	...	3	...	...	16	19	4
RAWALPINDI DIVISION.														
18	Gujrat	...	...	17	6	1,436	10	1	1	2	...	2	...	1
19	Shahpur	...	...	23	8	986	5	...	...	1	2	...	1	...
20	Jhelum	...	...	15	2	888	1	1	...	...	...	1	1	1
21	Rawalpindi	...	...	14	7	1,170	8	4	3	...	...	...	...	3
22	Attock	...	...	14	4	618	6	4	...	...	...	1	...	...
23	Mianwali	...	...	16	5	375	3	1	...	1	...	...	2	...
MULTAN DIVISION.														
24	Montgomery	...	...	24	20	1,834	65	3	1	2	7	16	20	21
25	Lyallpur	...	...	20	18	973	71	8	7	8	5	10	27	25
26	Jhang	...	...	13	7	981	12	...	2	3	...	12	...	...
27	Multan	...	...	23	13	1,645	37	1	5	3	..	16	10	13
28	Muzaffargarh	...	...	24	4	849	4	...	2	1	...	...	2	...
29	Dera Ghazi Khan	...	...	23	1	714	1	...	1	...	...	...	...	1
Total		...	577	303	34,099	693	203	121	91	131	227	267	220	

No. VIII.

OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

THS.						6			7		8			9	10
	August. 14	September. 15	October. 16	November. 17	December. 18	TOTAL.			NUMBER OF DEATHS AMONG CHILDREN.		RATIO OF DEATHS PER 1,000 OF POPULATION.				
						Males. 19	Females. 20	Total. 21	Under one year. 22	Over one year and under ten years 23	Males. 24	Females. 25	Total. 26	Mean ratio per 1,000 for pre- vious five years. 27	Number. 28
				20	94	73	92	165	85	58	0·17	0·24	0·20	0·35	1
				..	6	10	8	18	6	10	0·02	0·02	0·02	0·08	2
				..	9	42	40	82	26	40	0·11	0·13	0·12	0·06	3
	1	1	..	1	..	1	0·002	...	0·001	0·14	4
	9	4	13	1	9	0·02	0·01	0·02	0·16	5
	0·10	6
	1	..	8	18	13	31	1	4	0·05	0·03	0·04	0·47	7
18	15	23	44	49	175	141	316	67	159	0·35	0·33	0·34	0·60	8	
..	..	5	3	24	27	28	55	12	18	0·06	0·08	0·07	0·16	9	
9	8	6	18	8	92	56	148	32	82	0·29	0·23	0·26	0·34	10	
15	5	9	..	..	75	42	117	23	75	0·13	0·09	0·11	0·44	11
14	12	17	3	23	122	123	245	80	122	0·19	0·26	0·22	0·55	12	
..	..	1	18	73	57	47	104	29	53	0·11	0·11	0·11	0·32	13	
4	4	3	5	7	35	23	58	18	34	0·07	0·06	0·07	0·19	14	
23	3	9	21	4	88	63	151	62	60	0·19	0·16	0·17	0·29	15	
4	2	..	12	1	61	48	109	40	59	0·17	0·17	0·17	0·24	16	
17	7	12	6	5	45	44	89	27	46	0·13	0·16	0·14	0·19	17	
1	..	4	..	..	5	7	12	4	6	0·01	0·02	0·01	0·42	18
1	..	1	..	17	13	10	23	6	16	0·03	0·03	0·03	0·71	19	
..	..	..	..	4	4	4	8	1	6	0·02	0·02	0·02	0·67	20
..	..	..	..	10	11	9	20	7	9	0·04	0·04	0·04	0·16	21
..	2	..	1	..	3	5	8	..	8	0·01	0·02	0·02	0·31	22	
..	..	..	..	1	3	2	5	1	2	0·02	0·01	0·01	0·23	23
13	5	5	7	11	67	44	111	24	70	0·17	0·14	0·16	0·96	24	
16	6	4	3	6	71	54	125	25	67	0·14	0·13	0·13	0·59	25	
1	2	..	2	2	18	6	24	7	12	0·06	0·02	0·04	0·27	26	
17	10	3	7	10	58	37	95	32	45	0·12	0·09	0·11	0·17	27	
..	..	..	..	..	2	3	5	1	1	0·01	0·01	0·01	0·13	28
..	..	..	..	..	2	..	2	..	1	0·01	..	0·004	0·12	29
153	82	163	170	372	1,187	953	2,140	617	1,083	0·11	0·10	0·10	0·33		

DEATHS REGISTERED FROM FEVERS IN THE DISTRICTS

1 Number.	2 DISTRICTS.	3 CIRCLES OF REGISTRATION.	4 VILLAGES	MONTHS								5	
				1 Number in each dis- trict.	2 Number from which deaths from Fevers were reported.	3 Number in each dis- trict.	4 Number from which deaths from Fevers were reported.	5 January.	6 February.	7 March.	8 April.	9 May.	
1	2	3	4	5	6	7	8	9	10	11	12		
AMBALA DIVISION.													
1	Hissar	...	...	27	27	960	960	1,030	790	1,142	1,226	1,589	1,514
2	Rohtak	...	...	20	20	722	722	796	570	815	1,019	1,518	1,617
3	Gurgaon	...	...	24	24	1,351	1,340	681	645	722	725	985	1,114
4	Karnal	...	..	25	25	1,390	1,390	1,536	984	1,167	1,209	1,529	1,834
5	Airbala	...	...	19	19	1,715	1,715	529	394	489	452	722	730
6	Simla	...	...	3	3	208	106	32	37	39	30	46	47
JULLUNDUR DIVISION.													
7	Kangra	...	...	17	17	711	711	887	850	951	878	1,337	1,549
8	Hoshiarpur	...	...	23	23	2,111	1,885	1,149	939	1,089	1,257	1,823	1,597
9	Jullundur	...	...	17	17	1,222	1,080	892	655	752	875	1,448	1,349
10	Ludhiana	...	..	14	14	858	848	474	346	333	461	710	807
11	Ferozepore	...	...	27	27	1,499	1,462	1,681	1,231	1,309	1,220	1,851	1,793
LAHORE DIVISION.													
12	Lahore	...	...	30	30	1,121	1,101	1,321	891	551	849	1,549	1,963
13	Amritsar	...	...	15	15	1,037	1,027	1,146	822	854	1,268	2,046	2,047
14	Gurdaspur	...	...	22	22	2,246	2,246	788	496	604	586	1,304	1,255
15	Sialkot	...	...	28	28	2,053	1,963	981	810	998	982	1,223	1,282
16	Gujranwala	...	...	20	20	1,212	1,212	729	500	556	438	903	955
17	Sheikhupura	...	...	20	20	1,214	1,214	593	458	280	750	900	766
RAWALPINDI DIVISION.													
18	Gujrat	...	...	17	17	1,436	1,260	1,006	714	783	585	930	877
19	Shahpur	...	...	23	23	986	981	896	664	639	589	843	842
20	Jhelum	...	...	15	15	888	888	683	506	448	393	453	464
21	Rawalpindi	...	..	14	14	1,170	937	712	639	680	528	507	708
22	Attock	...	...	14	14	618	618	856	704	716	545	656	593
23	Mianwali	...	..	16	16	375	375	693	606	513	425	508	403
MULTAN DIVISION.													
24	Montgomery	...	...	24	24	1,834	1,534	996	801	669	585	903	885
25	Lyallpur	...	...	20	20	973	973	867	712	735	779	1,492	1,278
26	Jhang	...	...	13	13	981	746	659	577	559	510	701	635
27	Multan	...	...	23	22	1,645	1,645	1,295	990	899	778	1,340	1,159
28	Muzaffargarh	...	...	24	24	849	643	1,551	1,728	2,093	2,472	3,078	2,147
29	Dera Ghazi Khan	...	...	23	23	714	625	840	951	930	1,317	1,627	1,273
Total		...		577	576	34,099	32,507	26,304	21,040	22,315	23,731	34,520	33,483

No. IX.

OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

Julv. 13	Aug. 14	Sept. 15	October. 16	November. 17	December. 18	Males. 19	Females. 20	Total. 21	6			7			S	9	
									TOTAL.			RATIO OF DEATHS PPR 1,000 OF POPULATION.			Mean ratio per 1,000 for pre- vious five years.		
						Males. 22	Females. 23	Total. 24	Males. 22	Females. 23	Total. 24	Males. 22	Females. 23	Total. 24	25	26	
1,219	1,275	3,008	3,923	2,836	2,113	10,914	10,751	21,665	25·06	28·20	26·52	32·56	32·56	32·56	1		
1,149	847	1,565	1,941	1,803	1,909	8,215	7,394	15,609	19·68	20·83	20·21	34·95	34·95	34·95	2		
737	569	976	1,293	1,058	1,169	5,480	5,194	10,674	14·96	16·53	15·65	45·45	45·45	45·45	3		
1,353	1,195	3,130	6,231	3,775	3,015	13,913	13,045	26,958	30·67	34·86	32·53	39·62	39·62	39·62	4		
550	459	1,070	2,578	1,363	964	5,186	5,114	10,300	14·37	18·20	16·05	28·53	28·53	28·53	5		
49	48	42	40	31	36	276	201	477	10·00	15·07	11·65	19·01	19·01	19·01	6		
973	1,181	1,435	2,204	1,281	1,045	7,526	7,045	14,571	19·14	18·96	19·05	27·84	27·84	27·84	7		
1,383	1,132	1,799	3,321	1,928	1,753	9,805	9,365	19,170	19·66	21·84	20·67	25·87	25·87	25·87	8		
1,217	1,300	2,146	3,403	2,441	2,028	9,502	9,037	18,539	21·11	24·85	22·79	23·68	23·68	23·68	9		
711	738	1,615	2,916	2,174	1,412	6,432	6,265	12,697	20·17	25·18	22·37	23·27	23·27	23·27	10		
1,492	1,433	2,933	4,125	4,052	3,271	13,512	12,884	26,396	22·58	26·81	24·46	24·51	24·51	24·51	11		
1,583	1,395	2,238	3,584	3,146	3,145	11,367	10,851	22,218	17·86	22·60	19·89	21·34	21·34	21·34	12		
1,555	1,508	2,136	2,744	2,375	2,003	10,479	10,025	20,504	20·21	24·46	22·09	26·86	26·86	26·86	13		
1,021	964	1,546	3,059	1,910	1,259	7,537	7,255	14,792	16·12	19·08	17·45	25·58	25·58	25·58	14		
1,022	753	1,688	2,987	2,853	1,895	8,716	8,557	17,473	18·46	22·07	20·11	22·77	22·77	22·77	15		
870	706	1,009	2,289	2,888	2,542	7,307	7,078	14,385	20·96	25·75	23·07	29·11	29·11	29·11	16		
620	585	871	1,993	1,845	1,800	5,926	5,535	11,461	16·87	19·97	15·24	20·39	20·39	20·39	17		
811	764	932	1,285	1,434	2,096	6,461	5,756	12,217	14·73	14·93	14·83	24·66	24·66	24·66	18		
712	537	628	740	96	1,352	5,029	4,382	9,411	12·83	13·37	13·07	22·33	22·33	22·33	19		
418	380	515	685	774	1,287	3,637	3,409	7,046	15·12	14·59	14·82	25·72	25·72	25·72	20		
571	480	713	1,041	1,081	1,549	4,672	4,542	9,214	15·98	18·29	17·04	24·39	24·39	24·39	21		
520	503	537	851	1,226	1,726	4,959	4,504	9,463	18·93	18·31	18·63	26·95	26·95	26·95	22		
413	342	400	603	768	1,005	3,449	3,235	6,684	18·15	19·23	18·66	28·63	28·63	28·63	23		
775	630	1,050	2,078	2,376	2,746	7,521	7,023	14,544	19·12	21·92	20·28	22·04	22·04	22·04	24		
1,098	934	1,190	1,732	2,056	2,197	7,522	7,448	15,070	14·58	18·02	16·10	21·90	21·90	21·90	25		
573	454	579	994	1,300	1,691	4,867	4,365	9,232	15·93	16·47	16·18	21·25	21·25	21·25	26		
922	763	969	1,727	2,449	3,476	8,786	7,981	16,767	18·13	19·97	18·96	25·04	25·04	25·04	27		
1,266	764	687	1,099	1,474	2,074	11,313	9,120	20,433	36·66	35·09	35·94	31·05	31·05	31·05	28		
869	453	554	874	1,170	1,540	6,962	5,568	12,428	26·66	26·30	26·50	31·63	31·63	31·63	29		
26,492	23,180	37,996	62,349	54,830	54,153	217,271	203,127	420,398	19·39	21·81	20·49	26·84	26·84	26·84			

DEATHS REGISTERED FROM DYSENTERY AND DIARRHOEA IN THE

Number.	DISTRICTS.	CIRCLES OF REGISTRATION.	VILLAGES.			MONTHS						
			Number in each district.		Number from which deaths from Dysentery and diarrhoea were reported.	Number in each district.		Number from which death from Dysentery and diarrhoea were reported.	January.		February.	
			1	2		3	4		7	8	9	10
AMBALA DIVISION.												
1	Hissar	...	27	19	960	199	28	14	20	23	16	15
2	Rohtak	...	20	20	722	73	8	7	9	10	29	15
3	Gurgaon	...	24	23	1,351	148	6	10	21	11	16	19
4	Karnal	...	25	22	1,390	28	10	4	1	11	6	18
5	Ambala	...	19	19	1,715	231	19	11	14	20	27	32
6	Simla	...	3	3	208	5	3	1	2	9	19	3
JULLUNDUR DIVISION.												
7	Kangra	...	15	16	711	638	190	120	175	95	145	114
8	Hoshiarpur	...	23	5	2,111	5	...	...	2	...	...	...
9	Jullundur	...	17	17	1,222	52	10	8	19	16	38	24
10	Ludhiana	...	14	14	858	82	17	15	6	26	31	32
11	Ferozepore	...	27	23	1,499	72	30	24	31	21	23	19
LAHORE DIVISION.												
12	Lahore	...	30	28	1,121	73	27	18	32	41	82	65
13	Amritsar	...	15	15	1,037	121	28	7	11	40	66	54
14	Gurdaspur	...	22	22	2,246	1,248	8	94	130	114	256	188
15	Sialkot	...	28	27	2,053	183	22	11	46	52	96	69
16	Gujranwala	...	20	20	1,212	59	3	3	6	11	28	20
17	Sheikhupura	...	20	15	1,214	74	11	1	1	4	9	19
RAWALPINDI D. VISION.												
18	Gujrat	...	17	17	1,436	64	10	11	13	11	42	22
19	Shahpur	...	23	23	986	57	10	10	6	15	14	11
20	Jhelum	...	15	15	888	46	5	6	5	7	24	9
21	Rawalpindi	...	14	14	1,170	408	174	123	174	98	120	133
22	Attock	...	14	7	618	6	...	2	...	1	2	...
23	Mianwali	...	16	13	375	25	7	1	7	6	8	3
MULTAN DIVISION.												
24	Montgomery	...	24	21	1,834	46	2	6	7	2	9	3
25	Lyallpur	...	20	20	973	65	6	2	7	5	19	9
26	Jhang	...	13	13	981	64	18	17	14	9	34	24
27	Multan	...	23	15	1,645	26	18	7	8	14	27	16
28	Muzaffargarh	...	24	11	849	6	1	3	1	6	4	1
29	Dera Ghazi Khan	...	23	16	714	23	7	5	3	9	7	11
Total		...	677	493	34,099	4,127	678	541	771	687	1,197	948

No. X.

DISTRICTS OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

July. 13	August, 14	September. 15	October. 16	November. 17	December. 18	Males. 19	Females. 20	Total. 21	6		7		Mean ratio per 1,000 for previous five years. 25	9 Number. 26
									TOTAL.			RATIO OF DEATHS PER 1,000 OF POPULATION.		
									Males. 22	Females. 23	Total. 24			
23	31	94	44	25	22	180	175	355	0·41	0·46	0·43	0·41	1	
14	29	30	25	23	12	114	97	211	0·27	0·27	0·27	0·36	2	
12	22	34	41	35	27	132	122	254	0·36	0·39	0·37	0·58	3	
1	4	11	22	20	16	66	58	124	0·15	0·15	0·15	0·29	4	
26	13	37	82	58	36	222	153	375	0·61	0·54	0·58	0·69	5	
5	2	2	3	1	...	24	26	50	0·57	1·95	1·22	1·77	6	
114	93	127	85	109	84	740	711	1,451	1·88	1·91	1·90	1·30	7	
1	...	1	1	1	1	5	2	7	0·01	0·004	0·01	0·03	8	
33	35	43	45	42	28	207	134	341	0·46	0·36	0·42	0·34	9	
27	41	31	130	96	42	289	205	494	0·91	0·82	0·87	0·36	10	
20	57	54	65	52	76	255	217	472	0·43	0·45	0·44	0·25	11	
47	55	93	86	89	81	379	337	716	0·60	0·70	0·64	0·48	12	
43	49	47	83	89	61	330	248	578	0·64	0·61	0·62	0·41	13	
142	147	270	287	294	259	1,094	1,095	2,189	2·34	2·88	2·58	0·66	14	
46	43	87	71	87	65	389	306	695	0·82	0·77	0·80	0·66	15	
15	9	28	17	42	35	116	101	217	0·33	0·37	0·35	0·20	16	
10	7	2	9	9	11	61	32	93	0·17	0·12	0·15	0·05	17	
14	19	28	17	34	9	141	89	230	0·32	0·23	0·28	0·35	18	
5	6	12	12	11	8	63	57	120	0·16	0·17	0·17	0·29	19	
13	9	11	11	13	4	68	49	117	0·28	0·21	0·25	0·37	20	
106	91	147	143	153	220	914	768	1,682	3·13	3·09	3·11	3·34	21	
1	...	1	1	...	1	5	4	9	0·02	0·02	0·02	0·10	22	
3	9	7	14	8	6	35	44	79	0·18	0·26	0·22	0·48	23	
2	6	13	3	3	4	37	23	60	0·69	0·67	0·68	0·04	24	
6	6	13	7	9	13	59	43	102	0·11	0·10	0·11	0·22	25	
17	22	19	25	5	14	130	88	218	0·43	0·38	0·38	0·54	26	
11	25	19	32	24	16	117	100	217	0·24	0·25	0·25	0·28	27	
2	1	...	4	5	5	14	19	33	0·05	0·07	0·06	0·10	28	
5	12	15	9	25	15	80	43	123	0·31	0·20	0·26	0·24	29	
764	843	1,276	1,374	1,362	1,171	6,266	5,346	11,612	0·56	0·57	0·57	0·46		

DEATHS REGISTERED FROM RESPIRATORY DISEASES IN THE

1 Number.	2 DISTRICTS.	3 CIRCLES OF REGIS- TRATION.		4 VILLAGES.		5 MONTHS					
		1 Number in each dis- trict.	2 Number from which deaths from respi- ratory diseases were reported.	3 Number in each dis- trict.	4 Number from which deaths from respi- ratory Diseases were reported.	7 January.	8 February.	9 March.	10 April.	11 May.	12 June.
AMPALA DIVISION.											
1	Hissar	27	26	960	269	72	73	64	51	41	60
2	Rohtak	20	20	722	437	52	61	63	53	77	74
3	Gurgaon	24	24	1,351	317	82	72	82	63	82	72
4	Karnal	25	25	1,390	314	89	67	62	46	61	50
5	Ambala	19	19	1,715	1,585	596	392	599	478	495	487
6	Simla	3	3	208	3	3	1	1	12	17	6
JULLUNDUR DIVISION.											
7	Kangra	17	16	711	705	323	301	272	241	128	77
8	Hoshiarpur	23	23	2,111	935	251	192	220	166	172	148
9	Jullundur	17	17	1,222	476	185	170	141	121	188	135
10	Ludhiana	14	14	858	513	131	102	176	151	111	126
11	Ferozepore	27	26	1,499	357	136	132	133	152	104	94
LAHORE DIVISION.											
12	Lahore	30	30	1,121	346	235	197	174	200	253	198
13	Amritsar	15	15	1,037	507	179	172	185	374	391	409
14	Gurdaspur	22	22	2,246	741	672	48	49	39	63	60
15	Sialkot	28	26	2,053	225	101	93	177	133	138	136
16	Gujranwala	20	26	1,212	145	35	32	45	24	41	37
17	Sheikhupura	20	19	1,214	113	18	25	14	29	40	25
RAWALPINDI DIVISION.											
18	Gujrat	17	17	1,436	504	167	168	164	118	159	166
19	Shahpur	23	21	986	58	10	17	25	14	8	9
20	Jhelum	15	15	888	401	107	115	80	84	89	66
21	Rawalpindi	14	14	1,170	502	163	126	152	90	137	120
22	Attock	14	14	618	217	83	44	52	33	52	37
23	Mianwali	16	16	375	194	44	23	35	26	21	7
MULTAN DIVISION.											
24	Montgomery	24	24	1,834	91	7	24	15	12	19	15
25	Lyallpur	20	20	973	351	59	48	71	49	79	75
26	Jhang	13	13	981	372	133	127	73	56	37	60
27	Multan	23	21	1,645	201	105	83	68	27	66	46
28	Muzaffargarh	24	20	849	63	18	7	16	10	5	5
29	Dera Ghazi Khan	23	22	714	41	33	30	17	16	16	14
Total		577	562	34,099	10,983	4,093	2,942	3,225	2,873	3,090	2,814

No. XI.

DISTRICTS OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

July. 13	August. 14	September. 15	October. 16	November. 17	December. 18	Males. 19	Females. 20	Total. 21	6		7		Ratio of deaths per 1,000 of population.	Mean ratio per 1,000 for previous five years.	Number. 26			
									TOTAL.		Males.	Females.						
13	14	15	16	17	18	19	20	21	13	14	22	23	24	25	26			
38	37	34	37	63	78	343	305	648	0.79	0.80	0.79	0.79	1.15	1				
55	55	56	68	95	153	441	421	862	1.06	1.19	1.12	1.12	1.45	2				
53	46	53	72	93	104	477	400	877	1.29	1.27	1.29	1.29	1.71	3				
34	29	50	48	66	114	385	381	716	0.85	0.88	0.86	0.86	1.16	4				
444	277	470	1,015	832	780	3,729	3,136	6,865	10.33	11.16	10.69	10.69	8.25	5				
5	9	...	4	2	...	37	23	60	1.34	1.72	1.47	1.47	5.27	6				
86	79	120	129	202	146	1,103	1,003	2,106	2.81	2.70	2.75	2.75	5.62	7				
95	127	146	180	208	256	1,279	882	2,161	2.56	2.06	2.33	2.33	2.56	8				
121	123	149	152	150	165	1,019	781	1,800	2.23	2.15	2.21	2.21	2.28	9				
109	104	138	209	164	157	923	755	1,678	2.89	3.03	2.96	2.96	2.27	10				
107	73	118	71	83	162	755	618	1,373	1.26	1.29	1.27	1.27	1.32	11				
159	148	220	265	277	403	1,538	1,191	2,729	2.42	2.48	2.45	2.45	2.13	12				
248	316	283	344	368	346	1,806	1,809	3,615	3.48	4.41	3.89	3.89	3.30	13				
42	41	51	53	54	85	726	531	1,257	1.55	1.40	1.48	1.48	9.18	14				
83	79	137	144	196	188	872	738	1,610	1.85	1.86	1.85	1.85	4.12	15				
29	65	35	54	112	143	374	278	652	1.07	1.01	1.05	1.05	0.84	16				
28	28	20	30	34	25	177	139	316	0.50	0.50	0.50	0.50	0.26	17				
93	138	154	146	206	236	1,056	864	1,920	2.41	2.24	2.33	2.33	2.16	18				
6	8	3	4	9	6	61	58	119	0.16	0.18	0.17	0.17	1.23	19				
58	56	53	85	75	180	596	455	1,051	2.48	1.94	2.21	2.21	2.28	20				
99	92	118	131	170	351	987	762	1,749	3.38	3.07	3.23	3.23	3.17	21				
29	25	44	37	41	151	349	278	627	1.33	1.13	1.23	1.23	1.16	22				
13	18	10	16	24	13	140	110	250	0.74	0.65	0.70	0.70	0.89	23				
17	7	5	4	17	33	101	74	175	0.26	0.23	0.25	0.25	0.19	24				
78	44	64	54	58	135	453	356	814	0.88	0.86	0.87	0.87	0.73	25				
38	44	40	58	121	418	619	591	1,210	2.03	2.23	2.12	2.12	1.71	26				
51	55	59	67	64	84	452	323	775	0.93	0.81	0.88	0.88	1.13	27				
11	7	10	12	9	23	80	53	133	0.26	0.20	0.23	0.23	0.31	28				
5	14	26	20	37	58	162	124	286	0.63	0.59	0.61	0.61	0.55	29				
2,244	2,147	2,669	3,509	3,835	4,993	21,045	17,389	38,434	1.88	1.87	1.87	1.87	2.33					

DEATHS REGISTERED FROM PLAGUE IN THE DISTRICTS

1	2	3		4		MONTHS							
Number.	DISTRICTS.	CIRCLES OF REGISTRATION.		VILLAGES.									
		Number in each district.	Number which from Plague were reported.	Number in each district.	Number which from Plague were reported.	January.	February.	March.	April.	May.	June.		
1	2	3	4	5	6	7	8	9	10	11	12		
AMBALA DIVISION.													
1	Hissar	...	...	27	4	960	2	...	1	5	1	3	2
2	Rohtak	...	...	20	18	722	74	1	11	220	594	394	68
3	Gurgaon	...	...	24	11	1,351	42	...	54	342	353	86	..
4	Karnal	...	...	25	5	1,390	12	...	1	2	4	18	..
5	Ambala	...	...	19	...	1,715	...	...	...	...	...	...	..
6	Simla	...	...	3	..	208	...	...	...	...	...	...	..
JULLUNDUR DIVISION.													
7	Kangra	...	...	17	..	711	...	...	...	...	...	...	..
8	Hoshiarpur	...	...	23	2	2,111	2	...	...	1	...	3	1
9	Jullundur	...	...	17	1	1,222	1	...	...	..	...	...	..
10	Ludhiana	...	...	14	2	858	2	...	...	2	...	...	..
11	Ferozepore	...	...	27	...	1,499	...	...	...	...	...	...	..
LAHORE DIVISION.													
12	Lahore	...	...	30	15	1,121	14	...	...	4	68	180	65
13	Amritsar	...	...	15	2	1,037	1	...	..	...	3	...	..
14	Gurdaspur	...	...	22	6	2,246	8	...	..	5	1	17	3
15	Sialkot	...	...	28	27	2,053	803	332	815	3,696	9,341	6,377	1,306
16	Gujranwala	...	...	20	17	1,212	157	34	92	217	1,314	1,275	530
17	Sheikhupura	...	...	20	14	1,214	56	30	33	98	14	169	55
RAWALPINDI DIVISION.													
18	Gujrat	...	...	17	10	1,436	103	...	1	97	805	1,583	882
19	Shahpur	...	...	23	18	986	110	...	...	113	467	826	458
20	Jhelum	...	...	15	14	888	133	...	25	193	1,388	1,460	717
21	Rawalpindi	...	...	14	13	1,170	201	5	5	41	111	350	361
22	Attock	...	...	14	5	618	59	...	...	61	71	249	209
23	Mianwali	...	...	16	..	375	...	...	...	...	...	...	..
MULTAN DIVISION.													
24	Montgomery	...	...	24	11	1,834	41	...	...	18	32	68	74
25	Lyallpur	...	...	20	11	973	63	207	267	459	729	716	210
26	Jhang	...	...	13	4	981	3	...	...	...	4	8	2
27	Multan	...	...	23	4	1,645	9	..	1	3	27	2	1
28	Muzaffargarh	...	...	24	..	849	...	...	...	...	...	...	..
29	Dera Ghazi Khan	...	...	23	..	714	...	...	...	...	...	...	..
Total		...	577	214	34,099	1,836	609	1,306	5,582	15,327	13,784	4,944	

No. XII.

OF THE PUNJAB DURING EACH MONTH OF THE YEAR 1923.

						6			7			8	9
						TOTAL.			RATIO OF DEATHS PER 1,000 OF POPULATION.				
July. 13	August. 14	September. 15	October. 16	November. 17	December. 18	Males. 19	Females. 20	Total. 21	Males. 22	Females. 23	Total. 24	Mea.: ratio per 1,000 for previous five years. 25	Number. 26
...	...	...	...	...	...	6	6	12	0·01	0·01	0·01	0·94	1
65	415	485	511	1,310	1,454	2,764	3·14	4·10	3·58	4·10	3·58	1·85	2
26	16	31	109	436	581	1,017	1·19	1·85	1·49	1·85	1·49	0·89	3
...	79	99	118	160	161	321	0·35	0·43	0·39	0·43	0·39	0·09	4
...	...	...	...	...	...	...	...	...	...	...	...	0·79	5
...	...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	3	2	5	0·01	0·004	0·01	0·02	7
...	...	...	...	...	4	3	1	4	0·01	0·003	0·01	0·27	8
...	...	...	...	...	...	1	1	2	0·003	0·004	0·003	1·99	9
...	...	...	...	...	...	...	...	...	...	...	...	0·59	10
6	3	1	4	59	127	284	233	517	0·45	0·48	0·46	4·25	12
...	...	...	...	1	12	10	6	16	0·02	0·01	0·02	1·06	13
...	...	...	...	1	2	16	13	29	0·03	0·03	0·03	0·83	14
50	4	5	45	126	340	10,055	12,382	22,437	21·29	31·21	25·82	0·32	15
6	13	2	71	294	350	1,970	2,228	4,198	5·65	8·11	6·73	1·02	16
80	13	...	25	23	69	284	325	609	0·81	1·17	0·97	2·15	17
92	43	82	121	263	157	1,863	2,263	4,126	4·25	5·87	5·01	1·79	18
21	...	4	31	136	132	1,041	1,147	2,188	2·66	3·50	3·04	0·45	19
18	29	140	520	310	163	2,199	2,769	4,968	9·14	11·78	10·45	3·53	20
78	91	313	721	404	169	1,221	1,428	2,649	4·18	5·75	4·90	1·83	21
71	1	54	130	138	77	512	549	1,061	1·95	2·23	2·09	1·07	22
...	...	...	...	...	...	...	...	...	...	...	...	0·05	23
53	...	6	16	53	77	178	219	397	0·45	0·68	0·56	1·15	24
...	...	4	27	19	1,423	1,415	2,638	2·34	3·42	2·82	0·52	25	
...	2	24	11	43	44	50	94	0·14	0·19	0·16	0·09	26	
...	...	...	...	...	19	15	34	0·04	0·04	0·04	0·80	27	
...	...	...	...	...	...	...	...	...	...	...	...	0·03	28
...	...	...	...	...	...	...	...	...	...	...	...	0·004	29
475	197	760	2,222	2,461	2,479	22,838	27,248	50,086	2·04	2·93	2·44	1·20	

STATEMENT No. 1.

MONTHLY STATEMENT OF PLAGUE OCCURRENCES IN BRITISH DISTRICTS AND NATIVE STATES IN THE PUNJAB DURING THE YEAR 1923.

Districts and Punjab States.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		TOTAL.		
	Serial No.	Date.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Serial No.	Remarks.	
1 Hissar	5	4	1	24	11	402	220	594	394	12	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 Rohtak	6	5	1	85	54	471	342	639	353	11	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3 Gurgaon	7	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 Karnal	8	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 Ambala	9	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6 Simla	10	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7 Kangra	11	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8 Hoshiarpur	12	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9 Jullundhr.	13	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 Ludhiana	14	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 Ferozepore	15	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12 Lahore	16	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13 Amritsar	17	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14 Gurdaspur	18	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 Sialkot	19	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16 Gujranwala	20	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17 Sheikhupura	21	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18 Gujrat	22	21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19 Shaheedpur	23	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 Jhelum	24	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21 Rawalpindi	25	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22 Attock	26	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23 Mianwali	27	26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24 Montgomery	28	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 Lyallpur	29	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26 Jhang	30	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27 Multan	31	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28 Muzaffargarh	32	31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29 Dera Ghazi Khan	33	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total British Districts.	742	609	1,521	1,320	6,516	5,588	15,123	14,624	13,792	6,449	4,948	429	476	213	197	1,048	704	2,724	2,783	2,481	57,083	50,177	179	1	2		
1 Patiala	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 Bahawalpur	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 Jind	4	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 Nabha	5	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 Kapurthala	6	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6 Sirsa (Nahan)	7	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7 Maler Kola	8	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8 Faridkot	9	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9 Patiala	10	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 Kalsia	11	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 Dujana	12	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12 Bilaaspur	13	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Punjab States	28	14	146	104	923	546	645	1,016	386	18	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL ..	770	623	1,667	1,424	7,439	6,134	18,139	15,159	14,178																		